DOCTOR OF PHILOSOPHY

The Influence and Evaluation of the Project Managers Performance in the Libyan Construction Industry

Gherbal, Nawal

Award date:
2015

Awarding institution:
Coventry University

The Influence and Evaluation of the Project Managers Performance in the Libyan Construction Industry

By

Nawal El Mabrouk Gherbal

A thesis submitted in partial fulfilment of the university's requirements for the degree of Doctor of Philosophy

May 2015

Dedication

I would like to dedicate this thesis to my greatest parents, El Mabrouk & Aiada who played a key role in upbringing, educating me, giving me the love, the warmth and the affection and being a source of inspiration. Also this thesis is dedicated to my dear husband for his love, supporting, understanding and Patience during the years over which the work was carried out. Without his encouragement and help I never would have made it.

Acknowledgments

First and foremost, I thank Allah for all help; care and enabling me complete this work after long and stressful days and nights

I am grateful to my Director of Studies, Dr. Sam Ngambi whose excellent guidance, encouragement and help to make this thesis a reality. I wish to express my sincere thanks to Dr. Abdullahi Ahmed; sincere thanks are also extended to Dr. Amrit Sagoo for his encouragement, advice, guide and help in undertaking this research.

I would like to thank all staff of the School of Engineering and Computer, Colleague researchers for their cooperation, assistance and empathy.

I also would like to thank my brother Ahmed and my sisters Ameera, Naema, Malak for their unending support, to all friends and colleagues who supported and encouraged me, To all those who contributed to the success of this work

My special thanks must go to my beloved husband, Abdussalam for his support,

patience and his smile throughout the long period of this research and to my lovely sons Sanad, Anas and Wesam for their understanding, love and support during this work and I love to see them at high levels of education, prestigious position and proud of them.

Publications:

1. **Gherbal, N**., Ngambi, S (2015) Guideline for Implementing Balanced Scored card (BSC) in Libyan Construction Industry. *International Journal. of Project Organisation and Management (IJPOM)* (Under review).

2. **Gherbal, N**. (2015) the Influence and Evaluation of the Project Managers Performance in the Libyan Construction Industry. *IEOM International Conference on Operations Excellence & Service Engineering Orlando, Florida, USA September 10-11, 2015.* (Abstract Accepted)**.**

3. **Gherbal, N**., Sagoo, A. (2014).Critical Quality Factors and Financial Performance of the Libyan Construction Firms. Coventry University UK *Proceedings of the 2014 International Conference on Industrial Engineering and Operations Management Bali, Indonesia, January 7 – 9, 2014.*

4. **Gharbal,N**., Sagoo,A.(2014) Project Management Performance Measures on Construction Project in Libya Coventry University UK *Proceedings of the 2014 International Conference on Industrial Engineering and Operations Management Bali, Indonesia, January 7 – 9, 2014.*

5. Shibani, A., Saidani, M , **Gherbal, N** (2013) An Evaluation of Obstacles Preventing Implementation of TQM in Libyan Organisations. Business and Management Research Journal Vol. 1(3), pp. 84 - 91, September 2013. Available online at http://www.resjournals.com/RBM 2026-6804 ©2013 International Research Journals.

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7. Shibani, A. **Gherbal, N**. (2011). Recommendation a TQM Guiding Framework for Libyan Organisation. 5th Quality Conference in the Middle East, Social Responsibility and Corporate Governance, Challenge for Leadership in Change Times, Dubai 31-3 Feb 2001.ISBN 978-9948-03-638-8. PP, 32-42.

8. Shibani, A. **Gherbal, N**. (2011) an investigation on the CSFs of TQM in Libya. 5th Quality Conference in the Middle East, Social Responsibility and Corporate Governance, Challenge for Leadership in Change Times Dubai 31-3Feb 2001.ISBN 978-9948-03-638-8. PP, 165-173.

9. Shibani, A. **Gherbal, N**.(2012) TQM and its impact on Libyan construction industry: An empirical study. 5th Quality Conference in the Middle East, Social Responsibility and Corporate Governance, Challenge for Leadership in Change Times, Dubai 31-3Feb 2001.ISBN 978-9948-03-638-8. PP, 328-342.

10. Shibani A., **Gherbal, N.** (2012) An Investigation into the Critical Success Factors of Total Quality Management Implementation in Libyan Construction Organisations 5th Quality Conference in the Middle East, Social Responsibility and Corporate Governance, Challenge for Leadership in Change Times. Congress Proceeding - ISBN 978-9948-15-948-3,PP 165-174.

11. Shibani, A., Sagoo, A., and **Gherbal, N.** (2012). 'A critical review of the barriers that resist implementation of TQM in Libya: A case study on construction companies in Tripoli'. *Proceedings of the 6th quality conference in the Middle East*, '6th quality conference in the Middle East, Innovation-based competitiveness and Business Excellence'. Held Jan 2012 in Dubai.

12. **Gherbal, N**., Shibani, A., and Sagoo, A. (2012) 'Critical Success Factors of Implementing Total Quality Management in Libyan Organisations'. *Proceedings of the 2012 International Conference on Industrial Engineering and Operations Management*, '2012 International Conference on Industrial Engineering and Operations Management'. Held 03-06 Jul 2012 in Istanbul, Turkey.

Abstract

One of the main capital expenditures is construction projects; these can provide very large profits. These profits can be used for public projects; that are justified by cost-benefit analysis, or private projects; that are justified by budget constraints. Most projects have a very tight financial plan that is part of a large scheme. As projects are very cost intensive one of the main roles of project managers are to estimate total costs and ensure the budget is kept throughout the duration of the project.

Libya is a developing country that has a growing construction industry, however, the management of construction projects frequently experiences challenges with time and cost restraints and this affects the overall performance of the project as well as the performance of the project managers.

The main aim of this thesis is to investigate and evaluate the factors that impact project manager performance and their ability to complete and deliver projects successfully in Libya. This study will ascertain the role of project managers, the challenges that project managers in Libya frequently encounter the cause of time and cost overruns within construction projects and the main factors for successful construction projects.

This research adopted both quantitative and qualitative research methods. The findings are based upon 300 structured questionnaires distributed to general, project managers working on construction sectors in Libya (Tripoli). Completed questionnaires received were 183. This is a response rate of 61%.

The data was analyzed by using factor analysis (FA). A statistical analysis was used to confirm and addressed the issues of reliability and validity of the questionnaire survey as a measuring instrument. In addition structured interviews with qualified project managers were used to confirm that the data collected was truly reflective.

Upon the data analysis from the questionnaire survey and structured interview that the project manager is the most important factor affecting the success of the project in construction industries Libya, furthermore project manager skills are important component that influence the performance of project manager.

Proposed guideline has been adopted for implementation of balanced scorecard in Libya to help construction organisations improved their strategic management system. Finally, the conclusions, key findings, recommendations to industry, limitations of the study, and possible further work in research were discussed.

Table of Content

List of Appendixes

List of Figures

List of Tables

List of Abbreviation

The Following are the abbreviations which are used in this thesis:

Association for Project Management	APM
Balanced scorecard	BSC
Build-Operate-Transfer	BOT
Collaboration, Management and Control Solutions	CMCS
Construction Industries	CI
Critical Success Factors	CSFs
Design and Build Projects	D&B
Exploratory Factor analysis	EFA
Factor Analysis	FA
Financial Management Initiative	FMI
Foreign Direct Investment	FDI
Gross Domestic Product	GDP
Human Recourse Management	HRM
International Monetary Fund	IMF
Kaiser Meyer Oklin	KMO
Key Performance Indicators	KPIs
key Success Indicators	KSIs
Libyan Construction Company	LCC
Libyan Construction Industry	LCI
Libyan Dinar	LD
Limited Company	LTD
Libyan Housing and Infrastructure Board	LHIB
National Corporation for Information and Documentation	NCID
National Oil Corporation	NOC
Predictive Package for the Social Sciences	PASW
Principal Component Analysis	PCA

Performance Management Systems	PMS
Research and Development	R&D
United Kingdom	UK
United States	US
United Nations Industrial Development Organisation	UNIDO
United Nations	UN

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Chapter one

INTRODUCTION

1.1 Background:

A construction project requires input from many different parties, there are many stages to a project and input from both public and private sectors are often used on projects. The priority of a construction project is to be completed successfully within the financial plan. The extent of success of a project highly depends on managerial quality, financial aspects of the project, technical factors and the general organization and performance of the parties involved. The success of a project is normally evaluated if it has been delivered within the required deadline, budget and the specifications meets the clients expectations. Often, different viewpoints are used to evaluate the success of a project, such as; clients, developers, contractors and general public etc.

The main parameters used to determine whether a project is successful are time, cost, performance, quality and safety. In most cases, a project is considered successful if the individual goals of the client and contractor have been met; especially if they are financial goals (Lim, C.S. and Zain, M. 1999). Time, cost and quality parameters are the most popular criteria's used to assess the performance and success of construction projects (Chan, *et al* 2002).

Certain structure and techniques should be adhered to by project management in order to manage a project successfully. As well, as certain techniques used, it is also important to consider the interpersonal and human aspect of project management as this will also play an important role into the development of the project and ensuring project activities are overseen.

Every project manager is unique and has different ways of managing a team. If the same project was given to two different managers to oversee and manage, the project will be completed in the certain way the manager chooses to manage the project. The way a project is run varies depending on the perception and emotion of the manager as this can impact various aspects of a

project such as the decision making process and problem solving skills; these actions may make the difference between the success and failure of a project.

1.2 Description of the Problem:

There is a lack of empirical research that addresses the performance of project managers in the LCI. This research intends to investigate the issues by identifying critical success factors (CSFs) affecting project success, managers skills performance and explore the possibility of implementing (balanced scorecard) as strategy tool to improve LCI.

1.3 Aims of the study:

The main aim of the study is to explore and identify the main factors that affect project manager performance within Libyan construction industries. The study will also investigate how these factors impact the success of construction projects.

1.4 Research Objectives:

The objectives of this study are outlined below:

1. To explore the main problems facing the Libyan Construction Industry (LCI).
2. To critically analyse the factors that may influence continuous performance management within LCI.
3. To identify the main factors that affect the project managers' performance in the Libyan construction industries and how these factors contribute to success of construction projects.
4. To explore the range of skills, qualifications and competencies required for professionals to manage a construction project.
5. To investigate the impact and the implementing the balanced scorecard approach into Libyan construction companies.

Based on the research aims and objectives, research questions were formed they are summarized below:

1.5 Research Questions:

1. What are the main problems facing the Libyan Construction Industry?
2. What are the main factors that influence continuous performance management in Libya?

3. What are the key factors affecting the performance of project managers within Libyan construction industries?
4. How do these factors contribute to the success of construction projects in Libya?
5. What is the main role of the project manager in construction projects in Libya?
6. What effect do the skills of project managers have on the success of a construction project?
7. How can the balanced scorecard strategy be used to improve the performance of a project within the Libyan construction industry?

1.6 Research Methods:

In order to answer the research questions and satisfy the research objectives both a qualitative and quantitative method was used. A literature review was also conducted to identify how project manager's performance can be measured using critical success factors within the Libyan construction industry. The literature review found that previous research into critical success factors within the Libyan construction industry found a total of ninety one statements were developed in order to determine the level of implementation for each factor. A questionnaire was used as a quantitative approach and a structured interview was used as a qualitative approach in order to answer the research questions.

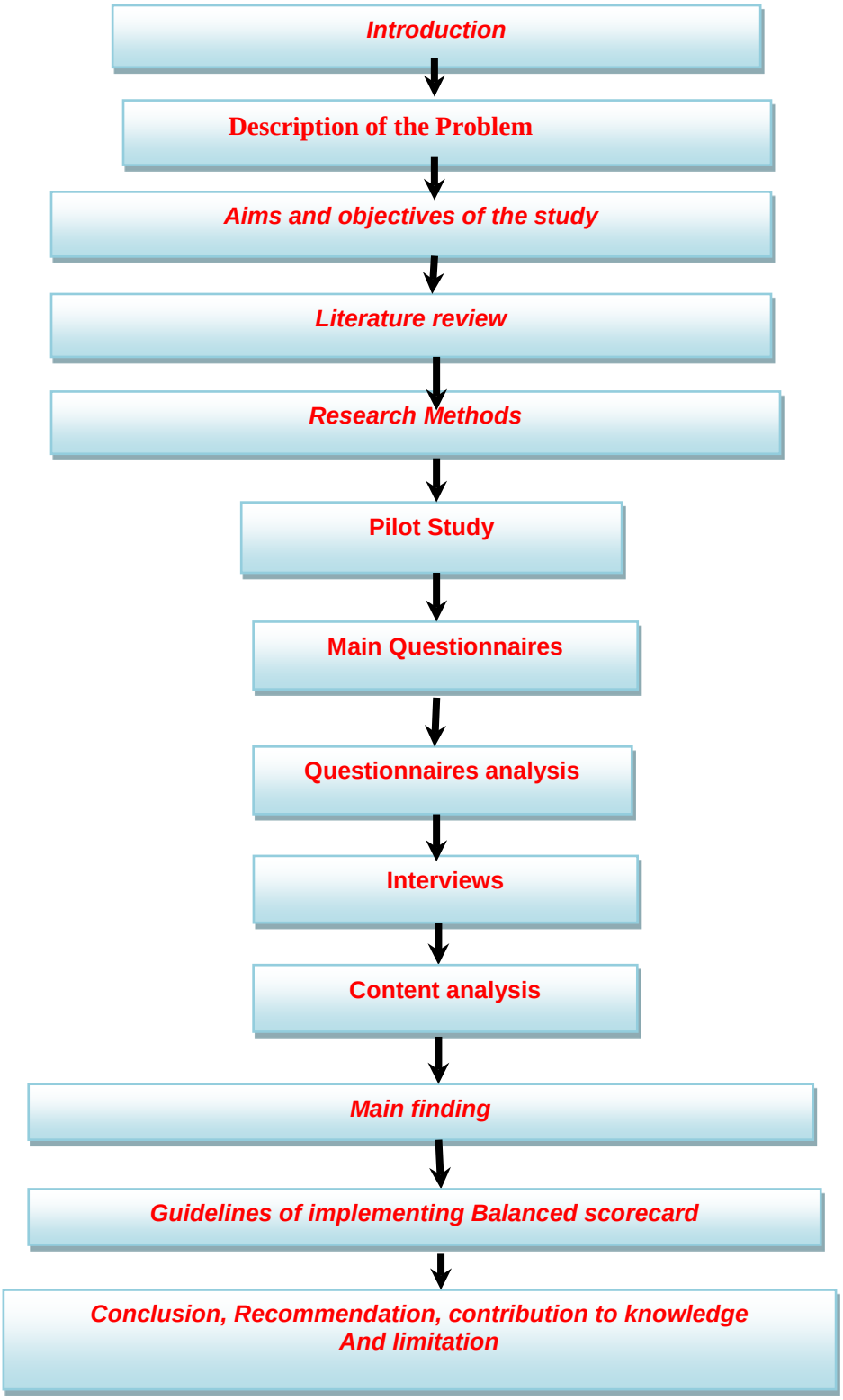

Figure1.1Research Design

1.7 Thesis structure:

Chapter 1. Introduction: this is chapter provides an introduction to the study, the problem statement, research questions, aims and objectives, research methodology and thesis structure.

Chapter 2. An historical overview of the Libyan Construction Industry, in this chapter provide an overview on Libya in order to provide the readers with background knowledge in Libya.

Chapter 3. An overview of the literature relating to performance management/measurement.

Chapter 4. An overview of critical factors that affect the success of the project and factors affecting project manager.

Chapter 5. An overview of the project manager and project performance in developing countries.

Chapter 6. Research Methodology: Research design and research methodology are outlined in this chapter. Research instrument employed to generate data and information required is also explained.

Chapter 7. Research Findings: Analysis and Interpretation. Findings of the study by responses to the questionnaire are reported, analysed and discussed in this chapter.

Chapter 8. An explanation of the Balanced scorecard concept, include a discussion of the interrelationship between the four perspectives, Financial perspective, Customer perspective, Internal process perspective, Learning and growth perspective.

Chapter 9. Guidelines for Implementing Balanced scorecard Approach into Libyan Construction Industry.

Chapter 10. Conclusions and Recommendations. Research conclusions and recommendations further studies are given in this chapter and Future scope of the research.

Chapter Two

Historical Overview of the Libyan Construction Industry

2.1 Introduction:

This chapter main aim is to provide an insight into the background of Libya as a country. This chapter will focus on the geographical location, economical circumstance, culture, population and education in Libya. The study was based in Tripoli city; the capital of Libya which in terms of population and economical activities is one of the most important regions of Libya. Many important public companies, governmental institutions and factories are based in or around Tripoli; therefore it was the ideal location for this study.

The overview section below looks at some factors that have had an impact on the proceedings and operations within the Libyan Construction Industry.

2.2 Overview:

Libya is an African country that spans over 1,759,540 square kilometers (679,182 sq. miles); it is the 17th largest country in the world (by size). The Mediterranean Sea is north of Libya and Tunisia and Algeria are to the west of Libya. Libya is bordered in by Niger in the southwest, Chad and Sudan in the south and by Egypt in the east, as shown in the map below in figure 1. Amongst all African countries, Libya has the longest coast at 1770 kilometers (1100 miles). For this reason, the section of the Mediterranean sea to the north of Libya is often referred to as the Libyan Sea (Otman and Karlberg, 2007and Sayeh, 2006).

Figure (2.1) Map of Libya (www.lonelyplanet.com)

In terms of Libya's climate, three main zones can be identified. The first zone is coastal zone which occurs along the Mediterranean Sea and is often referred to as Al-Sahell. This area is highly populated and is the heart of social and economical activities. The second climatic zone is the mountainous region; two main mountain ranges; the Western Mountains in the northwest and Green Mountains in the northeast reside in Libya. Lastly, Libya also has a desert zone, also known as the Sahara (Grifa, 2006 and El-Tantawi, 2005).

2.2.1 Population

As of 2012, the total population of Libya was 6,733,620 people, this included 166,510 non-nationals inhabitants (July 2012 est.). In certain areas of Libya the population density is quite low, e.g. as low as 3 inhabitants/km^2, the rural population of Libya is only about 18% of the total population. Libyan agriculture contributes to less than 5% of the gross domestic product (GDP) of Libya; however, roughly 13% of the population are employed in this sector (www.indexmundi.com/libya)

Annually, the population of Libya grows 3.5% and over the past few decades the age distribution has changed rapidly. Currently, Libya has a high number of young people as can be seen from

figure 6 which depicts the age distribution of Libya. It has been estimated that within the next decade an extra 500,000 homes will need to be built for the population (Historycentral.com).

Figure 2.2: structure of the Libyan Age population in 2012 (indexmundi.com)

2.2.2Education:

There is a total of 1.7 million students in Libya, 270,000 students enrol to university. Education is free for all citizens, and it is compulsory up to secondary school. A study in 2010 showed that the literacy rate in Libya is the highest in North Africa; 82% of the population can read and write. The first university of Libya was founded in Benhgazi after Libya's independence in 1951. The number of students enrolled in University between 1975 and 1976 was 13,418; a study conducted in 2004 found that this figure had increased to more than 200,000 students, excluding the 70,000 additional students enrolled in higher technical and vocational sectors. As a result of the rapid escalation in the number of students in higher education, the number of institutions offering higher education has also increased from two in 1975 to nine. There are also 84 institutes in Libya that offer higher technical and vocational courses (including 12 public

universities). As education in free in Libya, the public budget finances the institutions. In 1998, the percentage of national budget assigned to education was 38.2%. The three main universities in Libya are:

- Tripoli University (Tripoli).
- Informatics College / University of Libya (Tripoli).
- Garyounis University (Benghazi).

A few private universities have been launched since 2011, for example, the Libyan International Medical University. Before 2011, a small number of private institutions were also accredited.

In 1999, The National Corporation for Information and Documentation (NCID) published a study outlining the changing aspects of the student population within the past century in Libya. Before Libya's independence, during the Italian occupation (1911-1943) only 1% of the population was enrolled into schools and universities.

There are a total of 65 governmental training centers in construction and related activities as indicated by the Workforce, Training and Operation Committee (Ngab, 2007).

The training centers provide essential training programs such as workshops to teach the essential skills required to work within the construction industry. The training centers are scattered all over Libya. Figure 7 shows the location of these training centers, as can be seen 45% of the centers (35 centers) are in Tripoli, a quarter of centers (13) are in the Benghazi area, 11% (6 centers) are within the Sert region and the remainder of the centers, 19% (11 centers) are within the Sebbah region.

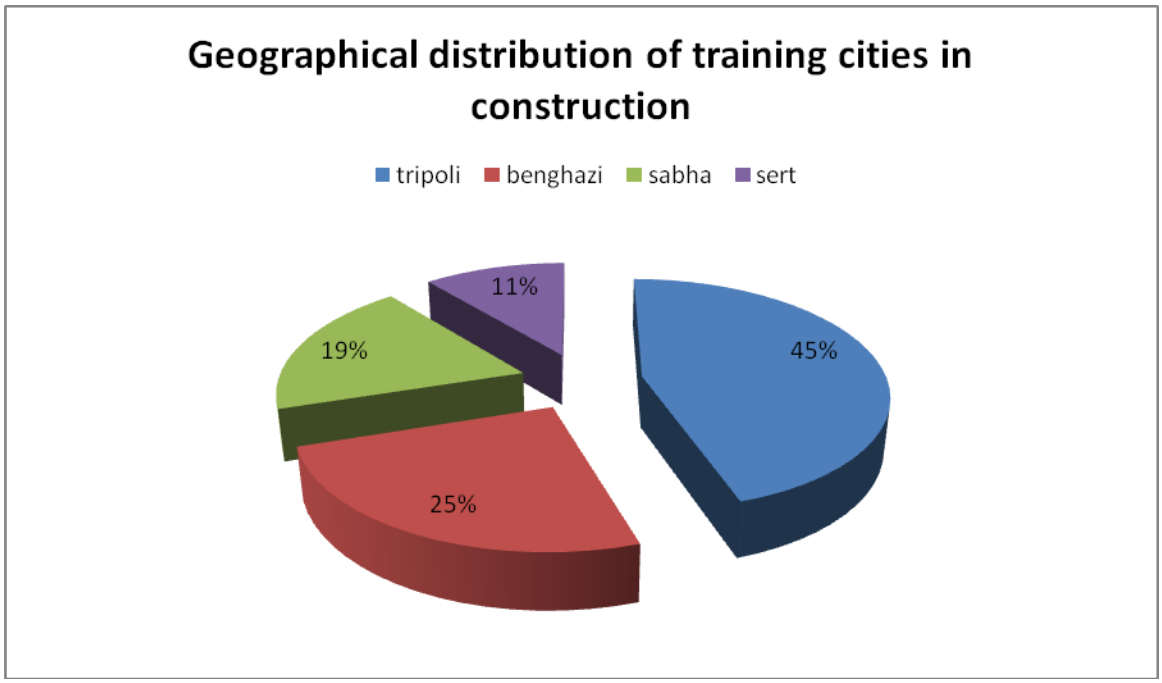

Figure (2.3): Geographical distribution of construction training centers

2.2.3 Climate :

Within the country, depending on the location, five main climatic zones have been identified. The coastal lowlands have a mild Mediterranean climate, warm summers and mild winters exist here as a result of the Mediterranean Sea and Sahara Desert; 80% of the population lives in this area. (El-Tantawi, 2005).

The desert region of Libya is considered to have very hot summers and extreme diurnal temperature ranges. There is light to negligible rainfall throughout all of Libya; only 2% of the country receives the adequate rainfall required for agriculture. Without having a solid understanding of the geographic and climatic aspects of the country, the operation of the construction industry cannot be effectively planned. Most of Libya has a dry or semi-dry climate which impacts the construction industry (Elshukri , 2000).

2.2.4 Cultural Aspects:

Historically, Libya has been home to many different nations and civilizations; which has had an impact on the culture, language, religion and beliefs. Libya's official language is Arabic;

however English is widely understood in all major cities as schools teach English. However, the English language must try and be utilized more all over Libya not only to enhance people's skills but also so that communication and business with international countries and companies can increase. A study conducted by The United Nations Industrial Development Organisation (UNIDO, 2001) showed that Libya lacks experienced workers; as a result, Libya is less able to attract and benefit from foreign direct investment. Another reason why Libya does not have contact with foreign investment is due to the lack of English speaking workers. Moreover, some companies and workers do not accept privatization; this may be because it is too expensive or because they believe that foreign cultures will negatively impact the country. Therefore, cultural requirements should be addressed at an early stage in order to avoid any trouble that may face the process. In order to reflect the local cultural requirements of the construction industry, Ferreira and Khatami (2002) recommend that companies need to adopt certain policies, strategies and procedures in place so that contractors, suppliers, designers and investors are not affected by the cultural requirements of the country. Any foreign countries that wish to do business with Libya must firstly address any unfamiliarity with the local conditions and culture.

In addition, Libya's wealth has created a false sense of pride and attribution in people's minds which is very difficult to remove. An example of their false sense of pride is that Libyans expect the government to provide free roads and local services and they refuse to accept toll roads or any other similar projects.

One very important factor that influences Libyan culture and businesses is that Libya is a Sunni Muslim country with strict religious rules and duties. This means that there are specific rules when it comes to borrowing money from banks, as banks are not allowed to charge interest. Also, the typical working day in Libya is Sunday to Thursday, Friday and Saturday is treated as the weekend, therefore this can impact communication between foreign companies and local investors.

2.2.5 Economy:

Libya's economy is primarily based around the nation's energy sector, which generates 95% of export revenue, 80% of GDP, and 99% of government revenue. Libya has one of the highest per capita GDPs in Africa because they gain considerable income from the energy sector and have a relatively small population. Libya holds the largest oil reserves in Africa and is an important

contributor to the global supply of light. Other natural resource Libya has apart from petroleum is natural gas and gypsum. The International Monetary Fund (IMF) estimated that Libya's real GDP growth in 2012 was 122%; as a result of the 60% plunge taken after the civil war in 2011, and in 2013 was 16.7%. The World Bank defines Libya as an 'Upper Middle Income Economy', alongside only seven other African countries. As a result of Libya's GDP growth, the Libyan Arab State has been able to provide an extensive level of social security, particularly in the fields of housing and education. (the-mea.co.uk).

In the past six years, Libya has made small progress to economically reform as part of a broader campaign to integrate the country into the international fold. For many years, Libya was under UN sanctions and remained in isolation. The sanctions were lifted at the end of 2004, as since then international rehabilitation began. After the sanctions were lifted, the oil sector grew by 5.8% per year and in 2006 reached a value of US$34.1bn. Between (2008 and 2012), the construction industry grew at an average annual rate of 5.17 %.(Grifa, 2006) (Imf.org).

Libya's oil and gas brought in a lot of international interest, however, until Libya can establish more permanent government foreign companies are less likely to invest until there is increased security and more attractive financial contracts. The National Oil Corporation (NOC) set Libya a target of producing 3 million bbl/day; however Libya's production of crude oil is significantly below this target at roughly 500,000 bbl/day.

The non-oil sectors such as manufacturing and construction have undergone expansion thus to include the production of petrochemicals, aluminum steel, and iron. Major infrastructure projects currently underway in Libya include the construction and development of the US$3bn Tripoli International Airport, there is also a plan for the construction of two power plants valued at US$1.36bn, and the laying of a crude oil pipeline.

Libya, however, is faced with chronic of problems, the most severe of them being the unemployment crisis. High levels of unemployment must be tackled immediately. Recent initiatives launched by the government required foreign companies investing in the country to train Libyan nationals, so that they can be more skillful in the global economy. This is expected to alleviate the problem to some extent. The government continues to encourage foreign investment. The Current Foreign Direct Investment (FDI) has recently been focusing on the hydrocarbon sector instead of other sectors; such as infrastructure and banking (Salama *et al.,*

2005). Another common widespread problem is corruption. Libya's GDP is predicted to grow 5.76% annually, the Libyan Construction industry has predicted to increase its share to the GDP to 3.43% and attain a value of US$2.19bn by 2012. However, the sanctions had severe detrimental effects on the LCI; high inflation rates, monetary instability and the volatility of the value of the Libyan Dinar (LD) resulted in the construction industry having to pay a higher price for building materials, workers and an expensive export cost for equipment and material.

The contributions of the LCI to the GDP has varied significantly over the years; between 1975 and 1986 the contribution decreased from 10.3% to 5.8%, this further declined to 4.2% in 1996, between 2003 and 2008 this increased from 5.3% to 6.3%. In terms of employment, the LCI has employed around 3.2% of the total workforce; therefore, the construction industry provides the backbone to the economy for any country and is vital to the national infrastructure (Grifa, 2007). The Construction industry comprises of a large number of small contractors, it employs a variety of skilled and unskilled laborers that are supervised by client professional advisors, such as; architects, designers, project managers and civil engineers etc. that all come together in a temporary factory to complete construction projects.

In 2005, the LCI grew by 5% due to the vast range of infrastructure projects that were completed across different industries, such as; the power sector, water infrastructure and housing. The Libyan Infrastructure 2006 Report calculated a growth rate of 5.5% in the LCI for 2005 and a total government capital investment of US$29bn over the period of 2006-2010 (rabobank.com).

2.3 Challenges Experienced within the Construction Industry:

The growth of the construction sector is economically imperative for any nation. As a result of fast development opportunities arising and reliance on foreign experts, Libya's construction industry faces many important challenges and difficulties. In order to meet national housing supply needs, the construction industry must increase its capacity or it will not be able to deal with the workload. A recent construction boom is occurring in Libya currently that will deem other construction activity of the past decades insignificant. As a result of the boom, houses, airports, ports, railways and roads must be newly built and improved. In order to meet the growing demands of the tourism industry new hotels, office buildings and resorts must be built.

After gaining its own independence from Italy after 18 years in 1952, Libya has had to face many different types of challenges, such as; economical, political, social and cultural difficulties in order to gain its relevance as a nation and start competing with other countries on a global scale. Up until civil war broke out, Libya had made enormous progress economically, with the majority of its wealth coming from oil and gas resources. The economical aspects of the country were revitalized and the standard of living had increased significantly for the general public both in terms of social and welfare facilities and materials e.g. transports, housing, schools, hospitals, water and electricity. In addition, in order to encourage foreign involvement and investment into the country, incentives have been created. Attractive measures have been put in place by the Libyan government to conjure an increase in investment projects, tourism and economical productivity. Examples of some measures put in place are; to increase facilities granting visa applications, allowing foreign banks and institutions to open branches in Libya, exporting machinery, supplies and equipment necessary to implement investment projects and removing custom duties and fees imposed on imports for 5 years commencing at the start date of the project. In developing countries, such as Libya, the execution and planning of a project is critical due to the restriction of the capital and skills needed in order to achieve different national targets within a limited time span (Sinha, 1985). Productivity and efficiency within the construction industry must improve in order for the country to achieve its goals of social and economical development and in order for its potential as a growing industrial nation to be recognized. Therefore, managers' competence must also be improved; as productivity and capability go hand in hand. Previous research has indicated that in order to improve manager competence, the key problems of management should be identified and productivity should be explored.

The knowledge and experience Libya has gained over the years can be very useful to other counties; in particular developing countries in Africa and the rest of the world.

2.4 The Contribution of Construction Industry to Libya's Economy:

Tumi, Omran and Pakir (2009) discovered that the Libyan construction industry contributes significantly less to the economy in comparison to other sectors such as the manufacturing and services industries. Records obtained from the economic intelligence (2003) show that the

construction industry accounts for only 2.1% of the annual gross domestic product; which is astonishingly low when the construction industry is considered as a fundamental part to the growth and continued development of any country. Hillebrandt (1985) states that construction is unique in that growth within the construction industry can stimulate growth of other industrial sectors as well. Therefore, the growth of the construction industry should not be viewed as a separate entity, but the effects it plays on the development of a country should be considered as a whole. As a result, it is imperative that world class researchers are hired so that causes of failures in cost and time performance within the construction industry can be ascertained and resolved. This study will focus on the causes and solutions to common failures experienced within the construction industry.

2.5 The Effect of Geographical, Social and Economic Factors on Construction Industry:

In terms of geographical factors that may influence the construction industry, Elshukri (2000), believes that *"arid and semi-arid lands have a social and cultural identity which moulds behavior and needs"*. In other words, people who have lived in certain conditions for decades often use the local environment in radically different ways than people in western societies. It can be said that geography has an important influence on the construction industry, the social and economical aspect as well as the processes and operations of the construction industry affect the overall organization and structure within the industry. It should also be noted that Libya's work culture is very different to Europe's, US and UK in terms of working hours. The public sector in Libya tends to work between 8am -2pm during the winter and 7.30am-2.30pm during the summer. The private sector however has no specific working hours (Sayeh, 2006).

In Libya, the construction industry is acknowledged as the construction and building sector; this is an umbrella term used to describe the general activities carried out, such as; planning, design, construction, production, operation, maintenance, repair, demolition plus many others terms used to improve building and civil infrastructure works.

As mentioned previously, the construction industry has made a significant contribution to the GDP of the country; however, in other parts of the world the construction industry faces many problems such as lack of quality, time and budget (Bubshait, 2007). The main challenges the construction industry in Libya is faced with is; firstly, lack of skilled consultants to design infrastructure projects, and secondly, there are very few big construction companies; most are

small and are unable to meet demands for a large project. Most construction firms are classed based on their annual turnover, their workload (i.e. the number of projects they are currently working on) and the number of permanent staff. The problem with small size companies are that they lack sufficient knowledge or experience in designing infrastructures. Thirdly, one major factor is lack of capital to be able to invest in and build large infrastructure projects as a joint venture project with international companies. As a result, Libya are yet to have an international Libyan construction company operating in other countries, also the public sector have a weak record of maintenance, profitability and site safety.

In addition, the country also does not have its own design code; American design and British codes and standards are dominant within the construction industry. This remains a big problem for the country; as standards set by foreign countries were not designed for Libya.

The LCI is affected by the country's economic cycle (Mahbashi, 2007); the discovery of oil was a turning point in Libya for industries such as construction plus many others. The discovery of oil leads to the government being able to spend a substantial amount on the construction sector; which increased the quality of development in the country. A statement made by The Ministry of Housing in 1986 stated that Libya's main setbacks were; lack of skilled workers within the construction industry and the absence of local contractors with technical, financial and administrative capabilities, which as a result, means the CI were unable to undertake medium or large projects.

The construction industry in Libya has both public and private clients, design, and management and construction specialists. There are many foreign construction companies such as; Vinci construction Grand projects (French company), Stafa construction international company (Turkish company), Punj Lloyd LTD (Indian company) and Dongah construction company (S.Korean company); these companies all work on different projects around Libya; such as Tripoli airport, the great man-made river project, Tripoli tower plus many local road projects (Libya construction.com).

In order to secure a foundation for continued growth, the Libyan government has launched one of the largest public infrastructure investment programmes in the world known as the Libyan Housing and Infrastructure Board (LHIB). The LHIB have secured approximately US$ 50 billion for projects to help improve housing, roads and bridges (Grifa, 2007).

However, it the LCI must be careful as it is still operating in different geographical and social circumstances. There are four main regions that the LCI operates in Libya, all the regions are influenced by social tribalism, nepotism, fluctuations in oil revenues and foreign workers. Political ideology has also played a significant role in determining the current status of the country. As a result, many foreign workers come to Libya to seek work from countries with high unemployment rates such as; Egypt, Korea and Pakistan. Most foreign works are paid low wages in comparison to local workers and as a result local citizens have abandoned working within the CI as the industry become saturated by foreign workers.

2.6 Communication Processes within the Libyan Construction Industry:

It was stated by Fryer (2004) that; "*Poor communication has long been a problem in the construction industry*". The use of information technology within the LCI has slowed down the development of the industry.

The main communication methods used within the industry are old-fashioned, letters, faxes and face-to-face meetings are the most used forms of communication. Communication technology; such as email, digital, visual and internet related systems of communication are hardly used (Grifa, 2007). As a result of the lack of awareness of the benefits that effective communication systems can add to the construction industry, the gap between management and employees has significantly increased as well as the gap between different departments within an organization (Jamshidian and Shanhin 2001, Grifa, 2007 and Low *et al*. 2001).

2.7 Libya after the war:

Civil war has been started in Libya Benghazi February 2011. The war had been moved to other cities in Libya, The UN Security Council voted on March 17 fly zone over Libya and the preparation of a framework for full military action if necessary to protect civilians in Libya. War continued until the regime fell, while Tripoli was not affected by the war, life was normal, only in some areas.

The oil sector brings in Libya's highest revenue. Libya has one of the highest per capital incomes on the African continent**.** During Libya's civil war, economy was hugely disturbed as oil output became virtually zero and as a result in 2011, the economy shrunk to 41.8%. However, as oil

production recovers this grew by 20.1% in 2012 and in 2014 another 9.5% was added. As the oil was the Main economic sores of Libya the construction was affected too in 2011and all the projects were stopped and most of international companies gone, so the war was the reason of daily and failure of many project. After the liberation announcement in October 2011 the life returned in most Libya areas and employers were started at work. By 2012 Most of companies returned to complete their projects. This overall Libya as my research was about Tripoli as mentioned above that is not affected by the war. (africaneconomicoutlook.org).

‘’ *the Libyan Government plans to invest around US$100 billion in infrastructure, under the National Development Plan, comprising comprehensive improvement to public housing, roads, rails, ports, hospitals, schools, and the utility infrastructure. The size of the construction market is expected to grow from US$3.8 billion in 2010 to US$6.12 billion in 2014’’*. the-mea.co.uk.

2.7 Manpower:

Physical labor is an essential factor in the operation of the construction industry. According to Gruneberg (1997), labor is a key element in any production process and without labor there would be huge repercussions in regards to project cost, quality and timing of the project (Abdul Kadir *et al.* 2005, Low *et al.* 1994 and Agapiou *et al.* 1998).

In comparison to many countries, Libya has a relatively low availability of human resources and has a lower number of laborers. Limited workforce and labour market is defined as when less than 25% of the total population are considered as the active workforce and more than 33% of the population is under 15 years (Grifa, 2007).

As a result of having a low rate of laborer’s foreign workers are employed very easily within the sector.

2.8 Summary:

This chapter described that the current standing of the LCI is a consequence of the geographical, historical, social, political, and economical problems faced by the country. Political ideology , such as imposing partnership principles, has played a significant role in determining the industries current status. However, all things being considered, the strengths of the industry are determined by the education and experience of the staff. The construction industry is a very profitable business and due to high demand and an increase in funds and advertisement conducted by the government it will flourish in the coming future. Therefore, many opportunities to develop the LCI do exist.

Chapter Three

A CRITICAL REVIEW OF THE PERFORMANCE MANAGEMENT WITHIN THE CONSTRUCTION INDUST

3.1 Introduction:

For many years now, performance management and measurement techniques and tools have been used by the construction industry to monitor and assess the performance of a project by setting targets that are time, cost and quality related (Thorpe and Beasley, 2004; Chau, 2008; Franco-Santos et al., 2012). Performance management and measurement tools help guide the project systematically by outlining the main goal, objectives and strategies of the organization. The use of critical success factors and key performance indicators can help identify and prioritize weaknesses so that corrective action can take place (Waal, 2007).

A continuous process is used in order to achieve financial and non-financial targets, develop skills and competencies and improve the overall quality process and enhance customer satisfaction (Waal, 2007).

Many organizations implement performance management and measurement tools in order to gain a competitive advantage and be able to continuously react and adapt to external changes (Chao, 2008; means and Alberti, 2010). Specifically, organizations use management and measurement performance standards in order to develop a coherent understanding of the business strategy by translating strategy into a range of critical success factors (CSFs) and key performance indicators (KPIs) (Brewer and Speh, 2000).

3.2 Project Management and Performance Management:

APM, *2014,* defined the project management:

"*Project management is the application of processes, methods, knowledge, skills and experience to achieve the project objectives*".

While, Kerzner (2009) defined project management as "the planning, organizing, directing, and controlling of company resources for a relatively short-term objective that has been established to complete specific goals and objectives".

In order to manage a project successfully, the application and integration of certain skills, tools and techniques are essential for the overall planning, directing, coordinating and monitoring. All aspects of a project have to be carefully controlled from the inception to completion. All workers involved in the project should ideally be highly motivated to deliver the product or service in time within the budget to the desired quality requirements for the customers (Fewings, 2005 & Carmichae, 2004).

A large part of project management is to deal with coordinating resources and managing people and change. In general, to manage a project successfully requirements must be identified, clear and achievable objectives should be set out, competing demands for quality, scope, time and cost must be met and all different concerns and expectations from various stakeholders should be dealt with (PMI, 2004).

However, Performance as A general definition of "*an evaluation of how well individuals, groups of individuals or organisations have done in pursuit of a specific objective*" (Ankrah and Proverbs, 2005). Objectives vary significantly depending on the individual or group, but from an industry or organizational perspective, aims and objectives generally revolve around satisfying the key stakeholders; i.e. the customers, employees, shareholders, various suppliers, government and society as a whole.

From an organizational point of view, Mullins (2005) described performance as, measuring certain factors, for example increased profits, improved service or enhanced results in certain aspects of organizational activity. However, from a construction point of view, due to the numerous participants who contribute towards the objectives of a project, construction is defined as the participants (i.e. client, architect or contractor) contribution to the implementation of the task (Soetanto, 2002).

Bititci *et al.* (1997) stated that Performance management is often seen as: "*a closed loop control system which deploys policy and strategy, and obtains feedback from various levels in order to manage the performance of the system"*.

Performance management is an umbrella term used to provide feedback on efficiency using numerous tools and methods. It creates processes to aid management development and reward. Performance management main aim is to concentrate and focus on employee performance; from creating awareness and clarifying employer expectations, to setting objectives and continuously supporting individuals to increase output. Hooper. M &Newlands. D (2009).

3.3 The Performance-Management Cycle:

Performance management is a continuous process, not an event (Armstrong & Baron 2011). The performance management cycle identifies any gaps or flaws in the organizational systems set in place. There are 4 main steps in the cycle, which are; plan, act, monitor and review:

Planning: At this stage it is essential to think about what needs changing and how it will be carried out. This includes induction, setting objectives, behaviors and competencies, planning personal development and strategy.

Act: This step is the process of acting on those plans and taking action to meet the demands.

Monitor: At this step, action is closely monitored to check on progress and improvement made, performance is monitored to see if objectives are met. Monitoring can be done through progress meeting either on a one-to-one basis or team meetings, peer reviews or customer feedback. This step is essential in gathering intelligence to see whether the action has been correctly implemented in accordance to the plan.

Review: This step uses the monitoring material gained and evaluates and assesses the progress and achievements. Feedback is often given at this stage and if any improvements need to be made, they are stated here so that the plan can be altered and the whole cycle can start again. A performance review meeting is often held which focuses on the individual's performance or a review can be done on a more ongoing basis. Figure 1 below represents the performance management cycle:

Figure (3.1): The performance-Management Cycle (Armstrong and Baron (2011)

From the diagram 3.1 the performance management cycle can help the organisations to manage their performance from starting point at initiating stage such as goal, objectives, aim of project then Act to see if there are any change, then next stage monitoring and controlling to see if there are any problem or change on budget, time schedule then review to check all the process.
The performance management cycle help the organization to get good result from the beginning till close project.

3.4 Benefits of Performance Management:

Performance management processes benefit an organization in many ways; it can help managers and employees improve their work and help them reach their goals. The benefits are listed below under three main categories; benefits for the organization, benefits to the manager and benefits for the individual. Armstrong and Baron (2011).

3.4.1 Benefits for the organization:

- It aligns corporate, individual and team objectives.
- Improves performance.
- Motivates employee's.

- Increases commitment.
- Reinforces core values.
- Improves training and development processes.
- Helps develop a learning organisation.
- Enlarges the skill base.
- Provides continuous improvement and development.
- Provides the basis for career-planning.
- Helps retain skilled employees.
- Supports total quality and customer service initiatives.
- Supports culture-change programmes.

3.4.2 Benefits for the Manager:

- Provides the basis for clarifying performance and behaviour expectations.
- Establishes a framework for reviewing and competence levels.
- Improves team and individual performance.
- Supports leadership, motivation and teambuilding processes.
- Provides the basis for helping underperformers.
- May be used to develop or coach individuals.
- Offers the opportunity to spend structured ‘quality’ time with teams and team members.
- Provides the basis for providing non-financial rewards to staff.

3.4.3 Benefits for Individuals:

- Provides a greater clarity of roles and objectives.
- Provides encouragement and support to help individuals perform well.
- Establishes the provision of guidance and helps in developing abilities and performance.
- Creates the opportunities to spend quality time with managers.
- Generates opportunities to contribute to the formulation of objectives and plans and to

Improve the way work is managed and conducted.

- Provides an objective and fair basis for assessing performance.

3.5 Performance Measurement:

The measure of performance has been recognized as a vital aspect in regulating and provides the basis of monitoring and controlling construction activities by bringing to surface their deficiencies (Singh *et al*. 2014).

'Performance measurement' is used to evaluate the performance of individuals (Berman and Wang, 2000: 409). 'Performance' has a number of meanings and can relate to inputs (i.e. resources used), outputs (i.e. services produced) and outcomes.

'Performance measurement' is an informative method used to identify what needs to be measured it and how to measure it (Roger, 1990: pp 14-15).

According to Bititci *et al*. (1997) performance measurement, "is the information system which is at the heart of the performance management process and it is of critical importance to the effective and efficient functioning of performance management systems." Evangelidis, (1992) perception of performance measurement is as a process of "*determining how successful organisations or individuals have been in attaining their objectives and strategies*". In a time of globalization and an increasingly competitive business environment, it is crucial to measure performance in order to align with organizational resources, activities and processes and achieve the major objectives of the organization in order to become a success. It helps maintain focus on the long-term goals and promotes a long-term strategic view of the organization and therefore produces meaningful measures. It is also useful in setting standards in order to compare practices from other organizations and it can provide a consistent guideline in comparing internal change as well as monitoring improvement efforts made.

From the definitions researcher concluded that the performance measurement is the heart of performance management PM and information system to evaluate the performance of the project processes and to identify what needs to be measured it and how to measure.

During the 1960s, the performance of public programs, in particular the budgeting process, were measured using a results-based management approach, an evaluation program was used in the 1970s (Poister and Streib, 1999: 325). Performance measurement became the 'new' scientific approach in the 1990s, for social agendas. Hatry (1999) described the reason why performance

measurement has become so popular. Performance measures are used as numerical or quantitative indicators, (Sinclair and Zairi, (1995), whereas, performance measurement is a systematic way of evaluating inputs put into in manufacturing or construction and the outputs (or results), it acts as a tool for continuous improvements (Sinclair and Zairi, 1995; Mbugua *et al.*, 1999). Many literatures on management have created various different types of performance measurements as there was a need for continuous improvement methods, examples of the most well-known measures include: the financial measures (Kangari *et al.*, 1992; Kay 1993; Brown and Lavenrick 1994; and Kaka *et al.*, 1995), client satisfaction measures (Walker, 1984; Bititci, 1994; Kometa, 1995; Harvey and Ashworth, 1997; and Chinyio *et al.*, 1998), employee measures (Bititci, 1994; Shah and Murphy, 1995; and Abdel-Razek, 1997), project performance measures (Belassi and Tukel, 1996) and industry measures (Latham, 1994; Egan, 1998; Construction Productivity Network, 1998; and Construction Industry Board, 1998); as cited in (Mbugua *et al.*, 1999). According to Cordero (1990), performance measurement can be classified based on the method of measurement and area of measurement. In order to measure performance, technical performance, commercial performance and overall performance can be used. Performance can be measured at the planning & design level, marketing level and manufacturing level etc., and the overall performance can be measured at the level of a firm or strategic business unit.

Figure (3.2) Outputs of performance measurements (Hatry, 1999)

The input measures shown in figure (3.2) refer to the resources the organization uses; it illustrates how certain resources (e.g., financial, staff, capital, and information technology) can have an impact on a project. Output refers to the direct product and result of the programs or activities being implemented. In other words, it is a measure of customer satisfaction, to see how well and efficiently customers are served. A quality measures assesses the extent to which customers are satisfied with the public services provided. Outcome measures relate to the changes and benefits that result from programs. Efficiency measures evaluate the amount of output (or outcomes) in relation to inputs, such as cost or time (Hatry, 1999).

3.5.1 Construction Project Success Performance Measurement:

Project success can be evaluated using many different levels of measurement. Evaluation of project success differs as the project develops, and is dependent on stakeholders (Morris and Hough, 1987). From a client's point of view, the success of the project is unknown until payment has been made or until the client has seen signs of progress and objectives have been met. On the other hand, a contractor will not know how successful the project is until the client pays them and gives them feedback on the project. Therefore, as a result of varying views of when project success can be determined, the general concept of project success remains ambiguously defined and the definition of success often changes from project to project (Parfitt and Sanvido, 1993). The secret to a successful construction project is to manage the project efficiently through all steps. Effective performance management depends on performance measurement (Maloney, 1990). The systematic approach to measure performance has interested many construction firms, government sectors, public and private clients and other project-orientated companies. Sinclair and Zairi, (1995) Stevens, (1996) Atkinson, (1999) Mbugua et al. (1999) Love and Holt, (2000) and Chan, (2001) collectively define performance measurement as the regular collection and evaluation of information regarding input, efficiency and effectiveness of construction project activities. Project performance can be evaluated both financially and non-financially, and can be compared and contrasted with the performance of others within the organization. Kelada (1999) states that performance measurement should not simply apply only to product or service quality, i.e. the business performance, but it should also extend further to quality management, customer satisfaction, needs, wants and expectations. This way, all three stakeholders, shareholders

customers and employees, can be satisfied. Measurement can be classified in three main ways. The first method of measurement is the numerical and quantitative indicators, the second method refers to the qualitative/subjective matters, and the third refers to deciding which performances to measure. Stevens (1996) states that there are 'hard' and 'soft' aspects in measuring project success; time and cost are the 'hard' aspects and satisfaction is the 'soft' aspect. Research conducted by Freeman and Beale (1992) and Rigs *et al.* (1992) separate project success into tangible and non-tangible aspects; the tangible aspect includes cost and time parameters, whereas the non-tangible aspect includes customer satisfaction, performance of project manager, weather conditions and other attributes. Even though all the literatures stated above use different ways to characterize performance measures, all literatures agree that results from the measurement have to be compared to the initial plan and reference values in order to identify the standard (Stevens 1996; Mbugua et al. 1999; Love and Holt, 2000). One main factor that influences the performance of construction projects and construction organizations is the state of the national economy, the implementation of process improvement programs can have an impact on the organization both in the long and short term. Construction Industry Task (Force 1998); (Tang and Ogunlana; 2003). One way of improving project and organization performance is to integrate process improvement strategies; such as, arranging collaborative partnering, having supply chains in place, developing management-risk strategies, management safety approaches, value engineering, Total Quality Management and Quality Assurance programmes. Since projects are becoming more complex and require sophisticated technologies and financing devices, Dulami et al. (2003) affirmed that a collaborative arrangement is necessary in order to execute a construction project; he believed that without a collaborative arrangement in place, project success is impossible. The integration of these approaches act as pivotal strategies to determine the success of construction projects. Adoption of these strategies may initially incur higher costs to project development but the benefits of having strategies in place will be seen further on in the project. A study showed that these strategies improved construction project performances within the UK construction industry and other projects internationally (Construction Industry Task Force, 1998).

3.5.2 Concepts of Performance Management with Respect to Performance Measurement

The literature review highlighted the lack of conceptual clarity regarding the terms 'performance measurement' and 'performance management'. Some literatures did not differentiate the two terms and some used the terms interchangeably (Radnor & McGuire 2004). Radnor and Lovell (2003) developed a concept known as performance management systems (PMS), the term was used for combined systems that involve both performance measurement and performance management. Whilst this new term is able to integrate the two together, it does not highlight any differences between the two separate terms. However, some publications did refer to the two terms individually and explained ways of distinguishing and separating the two. The majority of literatures describe the concept of performance management as, planning, action and monitoring performance. For example Bourne *et al.* (2003) states that organizations are focusing more on improving performance and measuring performance. A few literatures referred to the Balanced scorecard (BSC) approach as being the basis of a strong Performance Measurement. BSC was developed by Robert Kaplan and David Norton (Renaissance Solutions president) from Harvard Business School by combining financial and non-financial measures together in a single report. It aims to provide managers with more accurate information regarding activities that are not solely based on financial measures. Kaplan and Norton grouped their measures into four main groups, also known as perspectives. Each perspective contained measures that complement and combine traditional financial measures with strategies. The four perspectives are operational measures, internal process, customer satisfaction and innovation and learning. Kaplan and Norton (1993, p.139) state that the balanced scorecard "provides *executives with a comprehensive framework that translates a company's strategic objectives into a coherent set of performance measures,"* it is often referred to as a "strategic management system".

Figure 3.3: The balanced scorecard

Source: Kaplan and Norton (1992)

Kaplan & Norton (1992) recommended that for each perspective there should be at least four goals and measures. Performance indicators with specific and achievable targets will monitor each goal and measure; these are known as critical success factors (CSF) or key performance indicators (KPI) (Proctor; 2006, p43). The use of these performance indicators will ensure that each measure is kept specific and simple. Proctor (2006) also stated that the people that are responsible for ensuring the targets are achieved should put in place action plans to guarantee the success of each perspective.

3.6 Performance Indicators:

Key performance indicators (KPIs), also known as key success indicators (KSIs) help organizations identify and measure the progress made towards reaching their goals. Once an organization identifies and analyzes the objectives that need to be met, key performance indicators help measure the progress towards these goals. Performance indicators assess project impacts, outcomes, outputs, and inputs that are monitored whilst the project is being implemented. Once the project objectives are met, KPIs are used to evaluate the project's success. The project impacts, outcomes, outputs, and inputs can be clarified and linked by the use of indicators; problems that may slow down the progress of the project can also be highlighted (Effective Implementation: Key to Development Impact, September 1992).

Performance indicators were originally created in 1960 by the Americans for use in the public sector, the UK first used indicators in 1982 as part of the Financial Management Initiative (FMI); which was introduced by Whitehall in 1982 (Carter et al, 1992).

There are numerous data measurement tools that can be used to assess the performance of a construction operation. These methods are also used to evaluate how well an employee performed on a certain task. Indicators are used for evaluation purposes to compare the actual and estimated performance, this can be in terms of effectiveness, efficiency, and quality; both for workmanship and product.

In response to Egan's report (1998), UK teams working on Key Performance Indicators (KPIs) have identified ten parameters for benchmarking projects in order to achieve good performance. These parameters can be split into result-orientated and process orientated; the majority of the parameters are result-orientated; such as; construction cost, construction time, defects, client satisfaction with the product and service, profitability and productivity, process orientated parameters are; predictability of design cost and time, and predictability of construction cost and time, and safety. During the project selection phase, no indicators have been developed to help choose an appropriate project, however there are many indicators for the analysis stage where a delivery strategy is determined.

Mbugua et al., (1999) studies various construction task forces and identified a range of indicators for the UK construction industry, these are shown in the table below.

Table 3.1. The Performance of industry measures. Adopted from Mbugua et al., (1999).

UK Industry Performance Report (Glenigan, 2014).

Latham (1994)	Egan (1998)	Construction productivity network (1998)	Construction industry board (1998)	UK industry Performance (2014)
Client satisfaction Public interest Productivity Project performance Quality Research & development Training and recruitment Financial	Construction cost Construction time Defects Client satisfaction (product) Client satisfaction (service) Profitability Productivity Safety Cost predictability (const.) Time predictability (const.) Cost predictability (design) Time predictability (design)	People Processes Partners Products	Capital cost Construction time Time Predictability Cost Predictability Defects Safety Productivity Turnover & profitability Client satisfaction	Economic Indicators Client Satisfaction Contractor Satisfaction Predictability. Profitability Respect for People Environmental Indicators Housing Non-Housing Consultants

3.7 Summary:

This chapter discussed some of the most common issues regarding the significance of performance management, especially within the construction industry based on construction literature reviews. A general view of the Performance measurement and it's an important contributor to improving performance management practices and the success of the project.

This chapter presents a review and definition of literatures studying performance management, measurement and performance indicators within the construction industry and how these indicators helped the organisations measure their performance. The following chapter will present the concept of critical project factors in construction industry.

Chapter Four

A CRITICAL REVIEW OF PROJECT SUCCESS FACTORS

4.1 Introduction:

In order to have project success, the project must be measured to see how well it has reached the objectives and to identify the strengths and weaknesses of the project. In order to evaluate project success within the construction industry, there are three main parameters used; time, cost and quality. These three parameters form the basis of developing objectives for any construction project. It is commonly agreed that the main way to see if a project has been successful is to see whether it was completed on time, within the designated budget producing a high quality product which is value for money (Dulaimi and Langford 1997). Due to the increasing uncertainties in technology, budget and development processes, the construction industry is dynamic in nature. Most project are completed as a result of many planned and unplanned events or interactions. Albert et al (2004) believes that in this day and age, building projects are becoming much more complex and are often difficult to complete. The team often faces unprecedented challenges. However, with that being said, present findings have suggested that if important factors are highlighted then the project is more likely to be a success; these factors are known as critical success factors (CSFs) Rockart (1982).

4.2 Factors that affect the project (Industries classical performance indicators):

As mentioned previously, the main parameters that determine project success are time, cost and quality; these are often referred to as the iron triangle (Russell et al. 1997). If projects are not completed complying to these three factors then they will be deemed as unsuccessful. It is imperative that a balance is maintained between all three factors. The balance between these three factors will vary according to the particular requirements of the project, and their impact on each other will be just as unique to the project's circumstances

Figure 4.1: Traditional factors for measuring the success of a project (*Russell et al.* 1997)

4.2.1Time

Every project must be completed within a certain time frame; the time frame is set as a result of various meeting between the stakeholders involved in the project (Jackson 2000). The set time frame is the result of input from various teams; such as the design team, planning authorities, contractors, client, health and safety experts, environmental experts and various regulatory bodies. However, there is one main person that holds the most important responsibility; the project manager. They must take responsibility of the overall project and make sure the project is completed on time. As mentioned previously, if a project finishes on time it is seen as the main criterion for a successful project, both in the eyes of the client and the contractor. Newcomb et al. (1990) noted that many projects have come under fire and deemed as a failure of the global construction industry when they have not been delivered in a timely manner. NEDO (1983) believes that in order to complete a project on time, there must be discipline on the work site and

it is management's responsibility to ensure discipline is kept and cost and quality is also controlled. It can also be said that the objectives of the client and the project cannot be met until management recognize the relationship between time, cost and quality. Chan and Kumaraswamy (2002) remarked that studies from various countries over the past three decades have contributed significantly to the body of knowledge relating to time performance in construction projects. Jouini et al (2004) stated that managing speed in engineering, procurement and construction projects is a key factor in the competition between innovative firms. Customers regard time as a key resource and encourage contractors to improve their time performance without it having an impact on cost or quality.

4.2.2 Cost:

Rahman,I. et,al (2013) believes that money is a necessary foundation for the beginning of any project; especially in construction. Therefore, completing a project within the budget is the basic measure for success of any project. In order to meet the cost restraints of a project, there must be adequate availability and efficient management of various resources. Meeampol and Ogunlana (2006) believe that cost is the most important indicator of project success that is used by all parties. The reason why they believe this is the most important factor is because it shows the firms profitability and the productivity of the organization can be identified at any stage of the construction process.

Again, just like time, the project manager is responsible for ensuring the project is completed with the allocated budget. One of the main reasons a project goes over budget is due to project delays that prevent the project from finishing on time. If the project goes over budget, the extra cost is attributed to the project manager. In general, customers main concern in regards to the project is the overall profitability and accountability. The high cost of construction projects is due to going over budget and time delays (Charles and Andrew, 1990). Until now, research has focused on the technical aspects of managing costs within the construction industry in order to meet the objectives of the client. There are other factors that can increase the cost of a project.

The study of the project performance in terms of cost has been investigated since the early 1960s. (Iyer and Jha; 2005). These studies range from theoretical work to experimental work to structured research work. Many studies have investigated project performance in relation to cost and time factors.

4.2.3 Quality

The last criteria is just as important has cost and time. From the beginning of the project, the standard of the work must be high so that a high quality end product can be created. The quality of the project depends on the budget, time and many other factors that are all communicated to the project manager at the start of the project. Another important factor for the client is whether the product is value for money (Flanagan and Tate, 1997); this means that the quality should be as good as the money put in to the project (Webb 2003). Furthermore, to achieve a high quality project and therefore be a successful project, there are three important points that need to be considered:

1) The project team must be well integrated so that common objectives and culture are established.
2) The team's main focus should be its customers and they should aim to provide products and services to meets customer needs.
3) Maintain continuous improvement in the management of the construction project.

Once these three components have been achieved, there will be significant improvement in the project and customer objectives can be attained.

4.3 Critical Success Factors (CSFs):

Project success factors are the elements of a project that can be influenced to the project and increase the chance of success. Project success criteria are the measures by the judge successful outcome of a project. (Jari, A 2013)

In 1982, Rockart defined critical success factors as "the areas of activity in which favorable results are absolutely necessary for a manager to achieve the goals stated for the project" (Sanvido et al, 1992; Chan et al, 2004a; Li et al, 2005). Whilst, there are only a small amount of CSFs, most literatures accept that CSFs are able to predict project success. Furthermore, many studies consider CSFs to be targets to meet and aim for rather than areas of activity.

Saraph *et al*. (1989) defined critical success factors as the "*critical areas of managerial planning and action that must be practiced in order to achieve effective quality management in business"*.

The starting points to measure performance is to identify critical success factors e.g. identify the input that will significantly influence project performance (McCabe, 2001). The critical success factors can then be used to help achieve the project objectives and identify the main areas that

need to be improved. It is imperative that the critical success factors are correctly chosen; ideally at the beginning of the project phase. If critical success factors are poorly chosen and are unrealistic then they will be impossible to achieve and may demoralize works and can potentially damage any further improvements.

In relation to business a definition of critical success factors was given by Rockart (1982) as; "the limited number of areas, the result of which, if they are satisfactorily incorporated, will ensure successful competitive performance for the organization, and things must go right in these key areas for the business to flourish". To further support this definition, Tiong et al. (1992) implemented the concept to a build-operate-transfer (BOT) project model in order to win contracts.

For BOT projects, six critical success factors were found. In a BOT proposal, the financial and technical strength of the organization were considered to be the most important critical success factors. CSFs were defined by Walker (1994) as necessary components in a project that will maximize the opportunity to achieve goals and make the project a success.

Similarly, Rowlinson (1999) states that critical success factors (CSFs) are those fundamental issues essential to the project that must be preserved in order for teamwork to take place in an efficient and effective manner. CSFs must be acknowledged daily and operate from the start to the end of the project.

Sanvido et al. (1992) expresses that research into CSFs can help predict the success of a project; examples of research areas are investigating the organizations current operative activities and predicting its future success. The findings can then help outline a set of conditions that when completely satisfied ensure the successful completion of the facility. In Sanvido's et al. (1992) research found seven main factors that could predict business success, he tested this theory on sixteen projects. The seven main factors were; the facility team, the contract, facility experience, resources, product information, optimization information, and performance information; of these seven only four were found to be critical; the facility team, the contracts that will allow specialists to participate and behave as a team, adequate project management experience and timely performance information from the primary stakeholders in the planning and design phases of the project.

In order to investigate the effect of critical success factors on the construction industry experimental studies were conducted. One of the many studies carried out was managed by Schultz et al. (1987), who categorized critical factors into 2 main groups; strategic and tactical. Factors such as the project mission, top management support and project scheduling were included in the strategic group, whereas client consultation, personnel selection and training was part of the tactical group.

Ashley et al. (1987) studied design and build projects (D&B) and identified forty six critical success factors, the CSFs were classified into five groups;

1) Management, organization and communication.
2) Scope and planning.
3) Controls.
4) Environmental, economical, political and social.
5) Technical.

Whereas (Pinto and Slevin (1988) proposed ten CSFs for research and development (R&D) projects. The factors were identified at various stages of the project life cycle; e.g. from conception, planning, execution and termination. Their results highlighted the importance of establishing clear project goals and objectives at the beginning of each project phase.

Belasi and Tukel (1996) developed a new concept to classify CSFs and they describe the impact of each factor identified on project performance. Their concept categorized the CSFs into five areas; factors relating to the project, the project manager, team members, the organization and finally the external environment. One main benefit of grouping CSFs in this way is that the success or failure of a project can be identified to see whether it was related to the project manager and the project itself or to external factors. Therefore, this type of grouping help project managers understand the relationship between the factors and the project can be monitored and evaluated more precisely.

Tiong (1992) was not the only researcher to identify CSFs for BOT projects; Tam (1999) investigated CSFs in the Southeast Asian region, six critical factors for BOT were identified. These include; the experienced government body, intact contractual agreement, structured set of regulations, large and reliable consortium, experienced construction organization and no political

intervention and a uncorrupted political regime. The study found that only when all six critical factors are fully satisfied in BOT projects, both parties (the government and the developers) can benefit from a win-win situation. However, if a BOT project fails, not only can it cause a loss but it can also deter investors from investing in similar projects; as a result the government will also be at a loss.

In order to evaluate project success both subjectively and objectively, one must first establish CSFs and ensure the CSF measures are reliable and relevant (Cheng et al; (2000). One method of developing CSFs is to look at CSFs identified from partnering projects and assess how these factors can be used to improve the productivity and performance of construction projects. Cheng et al (2000) study found eight CSFs; effective communication, conflict resolution, adequate resources, management support, mutual trust, long term commitment, coordination and creativity. The degree of success can be determined using subjective measure e.g. the perceived satisfaction of partners expectations and compatible goals and Objective measures e.g. cost variation and rejection of work.

Cooke-Davies (2002) investigated 136 European projects from 23 organizations between 1994 and 2000; they found 12 critical factors. The critical factors were then divided into 3 main groups; project management success, individual project success, and corporate success. The findings showed that out of the 12 initial factors identified, only eight factors were regarded as critical for the success of project management. All eight factors revolve around risk, documentation and performance measures.

An effective benefit strategy must be put in place for the success of an individual project. The corporate strategy must relate to the critical factors of corporate success. Also all decisions must be aligned with the factors and anything learnt from experiences should be incorporated into continuous improvement. One large flaw with Cooke-Davies (2002) research was that no human factors were mentioned in any of the 12 CSFs; only process and systems, which seems wrong as human factors are ultimately what deliver the end project.

In order to increase the likelihood of achieving a successful project outcome, CSFs are required. (Westerveld; 2003). A Project Excellence Model was created by Westervald (2003) where he stated that organizations have to focus on result areas, e.g. success criteria, and organizational

areas, e.g. CSFs. Therefore, the model merges critical success factors and success criteria together in order to improvement project performance.

All literature reviewed state that CSFs are input factors that either directly or indirectly lead to the success of the project or business. Some researchers put emphasis on CSFs relating to the project managers and the organization, but they seem to have left out project characteristic, team members characteristics and external factors. On the other hand, a few researchers have focused mainly on the external factors, such as the environmental, economic, political and social factors crucial to a construction project development. One reason for only investigating external factors is that usually a big project takes a long time to develop and during this time external factors can play a huge role in the success or failure of the project; especially international projects (Pandia, 1994). Based on the experimental findings from Cheng and Li (2002) study into partnering projects, the core critical success factors identified were top management support, open communication, effective coordination and mutual trust.

Many studies in the past 40 years have looked at factors that affect project success e.g. Martin, (1976), Locke (1984), Celand and king (1983), Sayles and Chandler (1971), Baker et al. (1983) Pinto and Slevin (1989) and Morris and Hough (1987). Therefore, if CSF are identified and acknowledged correctly can ensure competitive performance and project success (Rockart, 1982, p 4).

Baker et al (1983), Slevin and Pinto (1986) ,Morris and Hough (1987) and Tuner (1993) all agree that the success of a project can only be determined once the evaluation dimensions are effectively defined. In general, the evaluation dimensions correspond to the traditional iron triangle of time, cost and quality.

Ashley et al (1987, p71) defined project success factors as “a result better than expected or normally observed in terms of cost, schedule, quality, safety and participant satisfaction.”

David Ashley (1987) was the first researcher to identify the critical success factors that were most influential the success of construction projects.

Research into CSFs began in 1976 based on empirical and theoretical studies (Mengesha, 2004 Ruben and Seeling 1967 Empirical: Sayles &Chandler, 1971: Martin, 1976: Baker et al., 1983 Empirical: Cleland and King, 1983: Pinto and Selvin, 1987: Tukel & Rom, 1995 Empirical: Walid and Oya, 1996 Empirical and Pinto and Kharbanda, 1995) see table 4.1.

This current study will build on past studies. As mentioned previously, Hillebrandth, 1985 stated that in both developing and developed countries the construction industry plays a vital role in the economy by contributing significantly to the gross domestic product (GDP) and by employing a sizable portion of the working population accounting for about half of the capital formation and interacting strongly with other sectors of the economy.

Many studies into the construction industry adopted the CSF approach to enhance the performance level and success of the project (Chua et al, 1999; Copper, 2001; Alkathami, 2004; and Jha and Later 2008)

Table 4.1 a brief summary of the factors obtained from literature Critical Success Factors affecting Construction Projects.

Factors	Savles & Chandler(1971)	Martin (1976)	NEDO (1983)	Fryer (1985)	Morris & Hough (1987)	Schultz et al. (1987)	Ashley et al. (1987)	Pinto and Slevin (1988)	Maloney (1990)	Newcomb et al. (1990)	Sanvido's et al. (1992)	Belasi and Tukel (1996)	Cheng et al (2000)	Hauschildt et al. (2000)	Cooke-Davies (2001	Cooke-Davies (2002)	Chan and Kumaraswamy (2002	Cheng and Li (2002)	Fryer (2004)	Low and Quek (2005)	Iyer and Jha (2005)	Zhang & Faerman, 2007	Alsadey (2011)	Rahman,I. et,al (2013)
good planning	*					*	*	*																
time	*		*					*	*	*		*		*			*				*			
efficient management	*						*	*	*															
responsibility and monitor	*						*	*																
continuous participation	*							*																
understanding of the project		*						*																
concept of the organization		*					*					*												
management support		*				*							*			*	*							
appropriate work and scope		*					*	*																
project team		*									*	*												

providing the resources		*									*		*												
mechanism of practical information		*									*														
review project and plan		*																							
clear goals					*																				
participation of the community					*		*																		
list things in order					*																				
cost	*		*		*		*					*		*			*				*				*
legal requirements					*						*					*									
contractual relations					*																				
solving problems				*	*								*								*				
Quality			*									*		*				*		*					
project manager	*		*	*	*		*		*			*			*	*				*	*		*		
environment around manager				*	*		*					*					*				*		*		
project manager skills				*																					
decision making				*																	*				
dealing with problems				*																					
ability to make critical decisions																									
manager monitor and control															*	*				*					
looking at the results of the project																				*					

manager and work environment							*					*											*	
client consultation and training						*																		
Effective communication													*				*	*	*					
commitment													*				*	*	*					
effective coordination																	*							
mutual trust													*				*							
safety							*										*							
Customer satisfaction				*		*											*				*			
People	*	*					*	*		*		*	*	*	*		*		*		*	*		

4.4 Factors Affecting Construction Projects:

The success and progress of a project are affected by many factors and variables (Sanvido et al. 1992). Certain favourable factors are necessary in order for a manager to reach the projects goals and objectives Rockart (1982).

The survival of organizations and projects rely on one important factor; the quality of leadership (Alsaday, *et al*.,2011). Osman, O. (2006) conducted an in-depth study investigating many successful projects to discover what factors make a project successful. Sayles and Chandler (1971) conducted a similar study within the construction industry and found five factors that impact the success of projects; efficient management of the project, good planning and right timing, responsibility taking and monitoring all important aspects of the project, use experience and knowledge from previous projects and, finally, have a continuous participation in the project. Martin's study (1976) found 8 factors which affect the success of a project; understanding the objective of the project, the concept of the organization, management support, appropriate delegation of work and scope, choosing the correct project team, providing all the resources which are needed for the project, the mechanism of practical information and, finally, reviewing the project and plan accordingly.

Whereas, in Morris and Hough; study (1987) nine factors were found for successful projects clarity of the project goals, be aware of any technological development, active participation of the community, list things that need to be done in order of priority, costs, legal requirements, contractual relations and solving problems that arise during the project quickly and efficiently. As can be seen from the three studies reviewed; there are many common factors found in all three studies that affect the success of the project.

The basis of Fryer (1985) study was to prove that the individual skills and abilities of the project manager or contractor have the biggest effect on the success of the project. Key skills identified in his study were; decision making skills, dealing with problems that arise effectively without compromising the success of the project, the ability to make critical decisions and any administrative changes.

According, to Cooke-Davies (2001), the project managers' performance on a project is based on how well they can monitor and control the project. Low and Quek (2005) main finding was that the overall performance of the project manager can be based upon the result of the project; such as the time, cost and quality of the product. Yet, Asadey (2011) believes that these three are not the only factors that can be used to evaluate the performance of the project manager; he believes that other factors relating to the manager and the work environment can also be used to monitor the performance (Alsadey**,** 2011).

Research conducted by Cambridge University's School of Business and Economics concluded that 80% of projects failed due to poor leadership (Zhang & Faerman, 2007).
Similarly, Hauschildt et al. (2000) believed that the success of a project relies extensively on human factors, such as; project leadership, top management support, and the project team rather than on technical factors. It was also found that as projects increased in intricacy, human factors became more important to the success of the project. Researchers found that there was a direct link between the critical role of the project manager's leadership and project outcomes (Hauschildt et al., 2000) Appendix 1.

4.5 Major Elements that Cause Construction Project Failure in Libya and others parts of the world:

As well as the CSFs mentioned above, many scholars have provided other reasons as to why project management can fail. A survey conducted by Collaboration, Management and Control Solutions (CMCS) found that project failure in the Middle East and parts of Africa, including Libya, are mainly caused by poor project planning and methodology, poor portrayal of unrealistic targets and completion dates, failure to being technically feasible and poor to ineffective communication. The study emphasized that across various industries there is an underinvestment into improving the abilities of project management.

Eight main root causes in project failure were identified by Kezboum (1993); they are as follows:

1. Poor understanding into corporate and business strategies on a project specialist level.

2. External teams planning the project with no direct input or involvement from functional managers or other internal project personnel.

3. Interruptions in planning at the master schedule level.

4. Inconsistent plans were carried out and executed by project managers without considering all the inputs.

5. Inadequate task definition and functional requirement not being properly addressed or communicated.

6. Inappropriate completion dates.

7. Lack of project management teams ability in systematically planning the process.

8. Failure to allocate sufficient time to project planning.

Other causes of project failure, based on the work of Avots (1969), include the following:

i. Inadequate basis drawn for the project.

ii. Wrong or inappropriate project manager chosen.

iii. Lack of a proper task definition.

Therefore, it can be said that factors responsible for the failure of a project are opposite of the critical success factors for project management.

A study conducted by Assaf and Al-hejji (2006) into the failures of a project found that the main factors were; failure to delay in milestone payment by the project sponsors (owner), insufficient manpower, low labour productivity and delivery of materials behind schedule. Lim and Mohammed (2000) investigated the key challenges to the modern construction industry and found that a lack of personnel performance, such as inadequate project experience, improper or lack of site supervision and the need for the right skills and knowledge were the main barriers.

Eight factors were discovered by Odeh and Battaineh (2002) to be responsible for project failures, they are; client related, contractor related, consultant related, materials related, labour and equipment related, contract related and contractual relationships.

4.6 Summary:

This chapter discussed the Critical success factors CSFs and how these factors affecting projects, iron tringle (time, cost, and quality), factors affecting performance of construction project and finally, the reason for the failure of projects was outlined. It was found that most factors that caused project failure were the opposite of critical success factors. As mentioned previously that project managers are one of the main factors affected to success projects. Next chapter will focus on the role and skills of the Project Manager and how it crucial for a successful project?

Chapter Five

THE PROJECT MANAGER AND PROJECT PERFORMANCE IN DEVELOPING COUNTRIES

5.1 An Overview of Project Management Practices in Developing Countries:

In developing countries, such as Libya, the implementation of construction projects presents some of the most challenging arenas within which to apply effective project management techniques. In reality, projects conducted in developing countries are often affect by crisis, uncertainty and suspense which tests the project managers ability in dealing with these situations and controlling and coordinating a diverse team of functional specialists (El- Saaba, 2001). Therefore, apart from the technical skills and abilities listed in the previous chapter, project managers must also demonstrate a range of behavioral skills that can help motivate a multi organizational team and encourage effective communication in order to achieve successful project outcomes (Faniran et al, 2000; El-Saaba, 2001). In order to optimize the performance of project managers in developing countries, it is fundamental to identify, assess and maintain behavioral competencies (Trejo et al, 2002). Indeed, in many developing countries, the role of project management has expanded and developed (Kartam et al, 2000). It is also accepted that improvement in project management is affected by having effective project management strategies in place (Struckenbruck and Zomorrodian, 1997; Kuruoglu and Ergen, 2000; Abassi and Al-Mharmah, 2000). It should also be noted that whilst project management capability (i.e. measuring success in terms of, the iron triangle) is fundamental to effective project performance, it is the project manager who delivers and governs projects and not processes and systems (Cooke-Davies, 2002). Therefore, the effective performance of the project management is a significant factor towards understanding and improving the linked managerial practices required (Goodwin, 1993). However, due to project management practices differing across different areas (Crawford, 2006), industries and sectors, it is important to understand that the project managers performance has to be related to the complex social, political and cultural aspects of the country (Abassi & Al-Mharmah, 2000; Faniran et al, 2000; Kartam et al, 2000). Thus, while project management competence should be supported, the project manager's performance measures can

significantly help identify, adapt and implement strategies towards responding effectively to the unique challenges that exist within the construction environment in developing countries. A predictive and consultative scheme is provided by measuring the project managers performance and this can stimulate the professional development of the project managers performance Therefore, to summarize, the project managers performance measures within the construction industry in developing countries can provide the foundation to human resource management functions, such as; developing management expertise, maintaining management succession and retaining skills of key managerial performers (Rwelamila, 2007; Plessis, 2007).

5.2 Performance Measures within Human Resource Management (HRM):

All organizations have the same common goals of being a success, making a name for themselves and being worthy in the market, ultimately, to become a market leader. A market leader not only has the correct financial and material resources but also has suitable knowledge, skills and high efficiency from all employees.

Due to the high demand to become a success, human resources have started monitoring the organization and individual employee performances. Human recourses have conjured up many ways to define and monitor performance. Warren (1934) believes that performance can only be measured qualitatively by gathering information in regards to the employee's performance and evaluating the data to see whether the employee has performed effectively.

Whereas, Reber (1985) defined performance measures as a rule, classification system or assessment protocol used by human resources in an organization to help make employee-related decisions.

Currently, no absolute method to measure performance has been determined and researchers in human resources are yet to find the ultimate way of measuring performance. Austin and Vallinova (1992) took a different approach to performance and believe that performance can be split into direct and indirect; indirect performance refers to aspects of the employee's behavior and characteristic that will affect their performance at work and therefore affect results. The tool used to measure performance must also be considered; the use of different tools could portray an

employee in different ways. If an employee is aware that they are being monitored, they may perform better than usual; this however, can be used advantageously for organizational growth.

As well as the workers attitude and behavior, Pierce (1994) and Liu and Walker (1998) all agreed that the results of completed projects should also be used to measure performance .

Austin and Vallinova (1992) stated that performance measures used in the construction industry by human resources should be appropriate, have clear rules based on performance and results in order to determine the standards and behavior should be measured at all stages and levels of the project. Using this method will be very beneficial to project managers as it will provide them constant and instant information on projects at all levels of production.

Ahadzie, *et al* (2006) believed that the stages of the project and the levels of regulation reflect the actual ideas of human resources and the management research team.

5.3 The importance of Performance Measures in HRM Practices:

Since the beginning of the 20th century, the importance of performance measures in human resource management (HRM) has been recognized. HRM research has focused mainly on research and development between managerial work and performance measures since 1916 when Henri Fayol published his work on industrial and general administration (Borman and Brush, 1993). Since 1916, many literatures have published research on how to tackle managerial performance in different ways (Conway, 2000; Garavan et al, 2000).

In order for managers to enhance or maintain organizational effectiveness, performance measurement must be used as it is essentially the managers that affect the use of organizational resources (Latham et al, 1979; Abraham et al, 2001). Furthermore, performance measures are often the only method that can evaluate the theory of work behaviour, effective administration of human resources and the provision of feedback to management personnel (Austin and Villanova, 1992; Hayes et al, 2000: Woerkom et al, 2002; Gibb, 2003). Thus, performance measures help monitor management succession and development in the workplace (Tett et al, 2002: Ford, 2004). Therefore, it can be said that the most critical human resource system in place is performance measures as they represent critical decisions that are vital to the range of human resources actions and outcomes (Cawley et al, 1998: Gibb, 2003; Scullen et al, 2003).Thus,

successful organizations are reliant on managers and other key human resource personnel that encompass a wide range of skills as a result of using appropriate performance measures to develop and preserve the competitive edge (Brophy and Kiely, 2002). Furthermore, in construction, it has become essential to proactively manage and monitor the performance of the main management personnel so that the organization can grow and maintain competitive edge (Dainty et al, 2004; 2005). Equally, project managers can enhance their management profiles by using performance measures to develop their interpersonal skills and knowledge (Cheng et al, 2005). The recognition of the importance of performance measures towards the personal and professional development of project managers reflects why MRM are mainly focused on using performance measures to improve and develop employees and organizational strategy (Dainty et al, 2003). In summary, in the construction industry, performance measures are used to refocus project managers in order to achieve managerial excellence in order to be able to thrive in a modern competitive environment.

5.4 Role of the Construction Project Managers:

The role of a construction manager is one of the significant factors to push the projects towards productivity. On the other hand, the successful of the construction project is the responsibility of project manager from the starting stage to end of project in addition completing the project on time is the big challenge facing the manager, as well as Issue of timely completion of a project has been as a problem which countries have faced (Sabet, P. *et.al*, 2014).

Project management is defined as a profession (Meredith and Mantel, 2003) or discipline (CIOB, 2002) that when done well is considered key to project success (Belassi and Tukel, 1996). The main role of the project manager is to successfully complete a project by optimizing necessary resources effectively and efficiently (Lock, 2003). Over the decades, project management has advanced into planning and controlling complex and diverse activities of modern industrial projects (Grundy, 2002). In order to successfully deliver a project, the manger must manage and handle limited resources of time, cost and quality.

Without successful project management, even the best planned project will fail as it is one of the most relevant factors relating to the successful delivery of a project (Hubbard, 1990; Levy, 2000).

Construction project management was defined by Chartered Institute of Building (2002) as; "the overall planning, co-ordination and control of a project from inception to completion aimed at meeting a client's requirements in order to produce a functionally and financially viable project that will be completed on time within authorized cost and to the required quality standards". Throughout the project life cycle, project management is used to add specific value to the project.

One special skills the project manager must have is to predict the dangers, threats or problems that may occur and plan, organize and control activities so that the project can still be successfully completed despite having risks involved (Grundy, 2002).

Within the construction industry it is common knowledge that the role of the project manager is critical to a project; however the specific jobs and responsibilities of the project manager are vague and many are unaware of the specific roles a project manager carries out (Brinberg, 1999). Some people believe that project managers job is to monitor, oversee and provide general supervision on projects (Lock, 1987), whilst others believe that the overseeing aspect is the project coordinators role and have tried to differentiate the roles of the project manager and the project coordinator. Researchers have discovered that there is a very small difference between the roles of a project coordinator and a project manager (Odusami et al, 2003). Jha (2006a; 2006b) made a bold statement and stated that the terms project manager, project coordinator, construction manager, project administrator and project controller are often used interchangeably. The debate into the different terms is ongoing; but, all researchers agree that regardless of the title used, a specific person must be in control of exercising total authority and accepting full responsibility for the management of the project (Lock, 1987). Equally, Walker (2002) argues that instead of comparing definitions and titles, researchers should be investigating the precise role of the project manager; as this is imperative in achieving project objectives. Walker (Ibid) elaborates further that if a name needs to be defined, it should encompass the principles of project management; which is to consider the interests of the client as a priority. The role of project managers have become much more diverse and complex; as the industry is moving away from the one client traditional focus into multiple clients with different interests; and it is the project managers task to satisfy them all (Newcombe, 2003).

Another key aspect that is debated frequently is the ideal professional background of the project manager. CIOB (2002) states that as well as the project manager having an appropriate professional background they should also have the required skills and competence to be able to manage all aspects of the project from conception to completion. Ogunlana et al (2002) noted that whilst it is possible for the project manager to have any sort of background, it is generally required that they must possess some degree of technical skills that relate to the project at hand. Whereas, Odusami et al (2003) believes that any construction related professional could become a project manager provided they acquire a good overall knowledge and experience of the industry.

Regardless of the project managers professional background and roles assigned, a project manager may have started off as part of the in-house team, a consultant or contracting organization, they will be expected to work with various other professions in order to guide the project towards achieving the desired objectives (Project Management Institute, 2008).. Therefore, in order to deal with the numerous competing interests involved, the project manager must have the human factor that is associated with managerial competencies (EL-Saaba, 2001; Cooke- Davies, 2002).

In order to manager a project effectively, Neuhauser (2007) stated that the two main responsibilities of the project manager are as follows:

1: To manage the technical components of the project, e.g. the plans, schedules, budgets, statistical analysis, monitoring, and control involved in the various knowledge areas and processes.

2: To manage people and motivate the team to successfully complete the project goals

As mentioned previously, Hauschildt et al. (2000) stated that the success of a project depends purely on human factors, such as; the project manager, top management support, and project team, rather than on technical factors.

5.3 Factors Affecting Project Manager Success:

In order to thrive and be successful, one must have determination and talent; managers are aware of this (Omran et al., (2011) (Buckingham & Coffman, 1999) and as a result, companies everywhere are struggling to attract, develop, and retain top applicants and employees. Collins

(2001) claimed that the organizations primary asset is having the right people for the job. As the workforce ages, technologies change and global demand increases, companies must capitalize on their workforce. The success and survival of companies and organizations are determined by the quality of leadership.

Whilst in this current day and age technology often supersedes certain conditions, effective leader can compensate for a lack of equipment and resources and it is impossible to imagine a world without leaders (Fiedler, 1987). Effective leadership has a huge impact on the well-being and success of an organization.

The style of management influences communication between co-workers and to the community and carries opportunities for growth and improved communication. Effective communication can provide the opportunity to understand differences in style of expression and action; and can resolve destructive relationships (Abdelnaser et al., 2008).

It is imperative for managers to be open and understanding of other cultures and traditions as it promotes a more peaceful and relaxing interaction and communication and also develops relationships.

Great project managers not only manage the job effectively but can lead people and have a vision; George (2003, 2004) proclaimed that authentic leaders have a unique leadership style that is consistent with their personality and character. An authentic leader understands their purpose, practises solid values, leads with the heart, demonstrates a high level of discipline and builds effective relationships in order to motivate workers, accomplish project objectives and enhance the performance of their parent organization or company.

Many researchers have followed in the footstep of early pioneer Carlson (1989) and investigated the role of managers and how managers allocate their time by using descriptive methods of investigation; such as direct observation, diaries and interviews, however, this method only found answers relating to how well group objectives were accomplished.

During the 1980's, research on management started to focus on the emotional and symbolic aspects of the managers to determine how they influence workers by making sacrifices and putting the need of the organization above their self-interests (Carlson, 1989).

Stewart (1982) pointed out that managers have unique role requirements that are specific to a particular type of managerial position within a particular organization. Therefore, a unique and genuine leadership style can be developed that is closely related to their personality and linked

with their personal values and motivations. There are certain intangible characteritics that are considered ideal when completing projects, therefore, it is crucial to identify personnel who are technically proficient and have effective communication skills (Murphy *et al.*, 1974).

Certain intangible assets are crucial for superintendents and project managers; these skills are not always easily quantified but, to a large extent, they do determine the success of failure of a project. Managing a project does not simply mean delegating tasks to appropriate individuals but also following people up and having the ability to motivate workers to perform at the highest possible level (Murphy et al., 1974).

The four basic management functions within construction companies are; planning, organizing, leading, and controlling functions; great managers should be well skilled in all four regions within construction management, many researchers have emphasised over and over that one of the most important success factors for a project is having an effective manager. Herbert et al., (1970) further backed this statement up by proving that having a well-qualified manager leading a team can save as much as 10%.

Despite this, there are many leadership issues still present within the construction industry. (Bresnen et al. (1986) and Langford et al., (1995) both stated that even though there are not many literatures to further support their statements, they believe that lack of attention has been given to leadership-related studies due to there being lack of knowledge in the industry (mainly social scientists) and there is lack of understanding of social science studies within the industry. Langford et al., (1995) also stressed the importance of developing appropriate leadership styles; he gave suggestions on the characteristics, attributes, and skills that can be effective for leaders in the construction industry. Goodwin (1993) elaborated further by stating the skills required for effective managers to have and stressed the importance of effective leadership.

The study of leadership style is very important and relative to the construction industry as managers often have to adapt and change their leadership style depending on what circumstances they are in. Rowlinson et al., (1993) conducted a study on the many different styles one manager can be; he found that construction managers played a supportive role when it came to researching possible projects to conduct, they then adopt a directive approach when contracts are being drawn up. It is hard to prove that certain leadership styles are more appropriate for the effectiveness of the project. Numerous studies have provided an understanding into the relationship between the styles of leadership to the performance of the project.

Monaghan (1981) findings found that project managers that tend to have a large amount of tasks to complete with a small amount of people to complete them produced an acceptable level of commercial performance. A similar study by Fraser (2000), found that project managers who preferred a team-style leadership scored high on the effectiveness scale, whereas managers who followed a production-style leadership scored the lowest, manager who lead a compromised leadership technique scored average effectiveness scores. Whilst there are various different studies focusing on leadership styles, skills and theories, there are very few that had strong results on how the effectiveness of leadership and styles can be improved. Appendix 2 outlines the factors affecting decisions made by project managers; these are divided into three different categories: External factors, internal factors and Personal factors.

5.4 Project Managers Competencies

The Cambridge dictionary defines competence as; "the ability to do something well" *Glader's (2001) definition of competence is; used to accomplish something. It includes knowledge in all their shapes, but it also includes personality traits and abilities, such as social competence persistence, stress tolerance and so on. Competence is at first an individual based term, but is however not impossible to also talk about organisational competence. One can then refer back to the complete competence at the individuals in the organisation, or the stored knowledge concerning systems, techniques or the culture."*

Therefore, using the two definitions above, competence is an ability both individuals and the organisation can acquire.

According to Bennis (1987, cited in Thach et al., 2007), certain competencies are required in order to be an effective leader; these competencies have been proven in many studies. Examples of required competencies are; vision, goal setting, interpersonal skills, self-knowledge and technical competence in regards to certain areas the manager leads. In addition, other commonly referenced competencies include; integrity and honesty, communication, technical competence, diversity consciousness, the development of others, being result orientated, change management, interpersonal skills, problem solving, decision making, strategic or a visionary, customer focused, business skills, team leadership, influence skills, conflict management, and, more recently, emotional intelligence, social and environmental responsibility. Also, depending on the

culture of the organization, humour and innovation can also be included in the list (Trinka, 2004, cited in Thach et al., 2007; Spencer and Spencer, 1993; Guggenheimer and Szule, 1998; Laszlo, 2003; Goleman et al., 2002; Thompson, 1985).

In terms of competency models for leaders, small differences have been noted between not-for-profit and profit leadership. The main competencies for non-profit organisations are; governance effectiveness, boardroom contribution, and service to the community (Thach et al., 2007), whereas, profit organizations tend to emphasize on financial responsibility and accountability more than non-profit organizations. Furthermore, public administration organizations tend to accentuate political know-how, physical health or endurance and building coalitions (Thach and Thompson, 2007).

Regardless of the various definitions of competencies, in general, competency can be expressed as the cognitive, functional, social abilities and skills; it incorporates all individual resources used to perform diverse tasks, gain required knowledge and achieve good results. Svetlik (2005) stated that all competencies can be linked to a mixture of cognitive and practical skills, knowledge, motivation, orientation values, beliefs, emotions, and other social and behavioural components that are applicable as a whole in any activity.

5.6 Summary:

This chapter aimed to present a review of Project Manager Practices in developing countries such as Libya and how the project can be success. An explanation and significance of the performance measurement in human resource management. Also this chapter discuss construction project manager role, skills and factors that affecting project manager success and how the project manager can deal with. Moreover explained the competency of project manager and how it is very important; as it developed through the changing nature of business circumstances within the industry. The next chapter will discuss the research methodology and the selected methods that used to reach the research objectives.

Chapter six

RESEARCH DESIGN AND METHODOLOGY

6.1 Introduction:

The research methods used to assess the main factors that affect project management performance within the construction industries in Libya will be discussed in this chapter. This chapter will also look at how the main factors can contribute to the success of construction projects. There are many methods used to collect data such as observation, focus group and case studies. The main research device used was the collection of primary data, qualitative and quantitative data Questionnaires surveys and interviews were conducted with managers from Libyan construction industry (LCI). These methods were used in this study are common and familiar in Libya and respondents can easily dealing with both methods.

This chapter will examine the methodological issues and research design used in order to find the most appropriate research techniques to help collect the answers required for this study.

6.2 Research Question

The following questions were set forth based on research aims and objectives to investigate the main factors:

1. What are the main problems facing the Libyan Construction Industry?
2. What are the main factors that influence continuous performance management in Libya?
3. What are the key factors affecting the performance of project managers within Libyan construction industries?
4. How do these factors contribute to the success of construction projects in Libya?
5. What is the main role of the project manager in construction projects in Libya?
6. What effect do the skills of project managers have on the success of a construction project?

7. How can the balanced scorecard strategy be used to improve the performance of a project within the Libyan construction industry?

Several different methods and sources were used to help answer these research questions; including both quantitative and qualitative methods; therefore making the research findings more reliable and valid. The suitability of the different methods used to gather findings will be evaluated. Research methodology is a method used by researchers to analyze the methods applied to a field of study; it is crucial to any research; as it helps direct the researchers as to what steps needs to be taken to help satisfy the aims and objectives.

Before conducting the research methodology, the researcher must fully comprehend and assess each objective and aim and the framework for the formulation of results must be defined; as this helps understand what information needs to be collected in order to address the problem. They must also have an extensive plan as to how research methodology will be conducted.

Appropriate methods must be selected for collecting research in order to answer the specific questions addressed in the study, in order to do so, the researchers is required to make important decisions on selecting the correct method that will take into account the following:

1) In order to answer the research question, what methods are the most suitable?
2) What approaches can be used to collect and measure data that will complement the adopted methods?

This research aims to find practical solutions to a problem that exists in reality; this study is purely practical and not theoretical. Hakim (1987) distinguishes between practical and theoretical research by stating that practical research is: *"an emphasis on the substantive or practical importance of research results rather than on merely 'statistically significant' findings, and second, a multi-disciplinary approach which in turn leads to the eclectic and catholic use of any and all research designs which might prove helpful in answering the questions posed."*

A comprehensive, thorough literature review is usually the first step taken for research as it allows the researchers to investigate what aspects have been previously explored and solutions that have previously been established.

Knowledge into most subjects is continually expanding, therefore a through literature review is a dynamic process that must be reviewed regularly; especially from the beginning of the study to obtaining all research and writing the thesis; as new studies may have been developed during this time.

6.3 Research Methodology:

There are two main types of research, in the past these were known as positivism and post-positivism, however, more recently these two concepts are known as qualitative and quantitative research methods, respectively.

Quantitative research is related to concepts that have relationships between variables that can be assessed in objective ways, whilst qualitative research addresses questions of meaning, feeling, understanding and socially created reality (Creswell 2003; Wang, 2008). Moreover, Esterby-Smith, (1991) & Remenyi et al. (1998) explained that, quantitative method is used to rationalize positivism in order to investigate hypothetical-deductive generalizations to the simplest possible basics in order to facilitate analysis. Whilst a qualitative approach is used in post-positivism to recognize human experiences in context-specific settings (Dilanthi et al., 2002,).

6.4 Research Design

Research methodology refers to the systematic way of solving a research problem and proving an underlying basis for the research process by taking logical steps throughout all stages of research (Kothari; 2005).

In this thesis, the research methodology aims to achieve all research objectives by using effective data collection and analysis and validation. In this way, all knowledge required to be able to answer the research question will be acquired.

Once research methodology has been planned and the purpose of research is clear, a suitable research design can be set up. It is important to note that research design is not the same as data collection. Research design organizes the research into a logical structure, whilst data collection is the methods used to collect research (DeVaus,

2001). Yin (1994) states that research design "deals with a logical problem and not a logistical problem;" this means that it is dissimilar to a work plan which expresses what needs to be done but is only done as a consequence of the research design. In summary, research design ensures all research has been gathered so that the initial question can be answered as unambiguously as possible (DeVaus, 2001).

Good and meaningful research must address the research question(s), test theory or theories and prove the hypothesis in an extensive way with the ability to withstand scrutiny; which is why decisions in regards to what type of data will be collected and what method is used is imperative. The research design will state the type of methods used (Sarantakos, 1998).

The basis of research should begin with a theoretical proposition which can be used to develop the research design, data collection and techniques used for analysis (Yin; 1994).

6.5 Data Collection:

There are two main ways to collect information that offer insight into research and recognize the course of action; primary or secondary sources.

6.5.1 Secondary Data:

Kinnear and Taylor (1996) define secondary data as previously published data collected for purposes other than the exact research needs.

Secondary research assesses data that has been previously collected by other researchers. Secondary research can be essential for research and is applied when a summary of collection of existing data has been analyzed. Secondary research sources include; books, journals, electronic sources, conferences, reports plus many other sources used for academic theories etc.

Typically, secondary research is used before primary research in the first stages to investigate what is already known, what needs to be done and what new data may be necessary for future research; it helps set a plan for the research design. It is imperative that secondary research is done correctly before primary research is implemented as primary research uses valuable money and time resources that will be

wasted if data has previously been collected (Mort 2003; Hague 2002; & Kinnear and Taylor, 1996**).**

In this study, the secondary research sources used were online publications, textbooks, conference papers and journals. Next, primary research was undertaken.

Table 6.1 summarizes the advantages and disadvantages of secondary data:

Table 6.1: The advantages and disadvantages of secondary data (adopted from Saunders et al., 2003)

6.5.2 Primary Data

Primary data refers to the collection of new, fresh, previously non-existing information that has been gathered for the study by the researcher. Some may say primary research is the most important method used to collect data. Saunders et al., (2009) believes that primary data is very important as it can collect first hand data therefore provides information that has never been used before becomes available. Kinnear and Taylor (1979) state that primary data is data gathered purely for the research and is specific to the research question.

There are many ways primary data can be collected, such as; questionnaires, interviews, observations and focus group interviews. This study only uses two methods to collect primary data; questionnaires and interviews. The results of primary data can be used to answer the research question and develop a better understanding of factors that can affect the performance of project managers within the construction industry in Libya. The rationale for using interviews and questionnaires for this study will be explained further in the following section.

A questionnaire is a structured set of questions devised to elicit facts and opinions in order to establish a base for recording data (Hague, 2002). When designing a questionnaire; a number of factors must be taken in account such as the type of research, the sample size and the characteristics of the sample (Oppenheim, 1992).

Two main types of questions can be used to gather the required information; open and closed questions.

This study used closed questions for the questionnaire; as these are quicker to answer and open-end questions were used for the structured interview based on findings from secondary research to ensure relevant and appropriate questions were asked.

Table 6.2 below summarizes the advantages and disadvantages of using primary data

Table 6.2: Advantages and disadvantages of using primary data (Hague, 2002)

Whilst no one source of research is better, research is most effective when both primary and secondary data is collected as this ensures suitable information is collected for the study (Yin; 1994).

Many research instruments can be used to measure research background. As mentioned previously, for this study a triangulation approach was used in order to answer the research questions and reach research objectives. A triangulation approach entails the use of both questionnaires to collect data from the managerial level and face-to-face interviews with general managers and project managers in order to express the views of key decision makers that are involved in construction projects. By using two different types of methods to collect data will make the research obtained worthy and improves research validity.

The benefits of combining both a qualitative and quantitative method has been well recognized and accepted by many literatures (Krueger & Casey; 1994). The

combination of the two methods results in enhancing the research design. The aim of combining the two methods is to reach answers that are not distorted, that are reliable and valid in response to questions asked by the researcher that do not focus on chance variations (Wilson, 1996).

6.7 Justification for Using Both structured Interview and Questionnaires survey:

The rational and reasons for using both interview and questionnaires are highlighted below:

- There are limited ways of collecting data in Libya; most Libyans are familiar with questionnaires and interviews
- Many other studies in different fields also used the combination of the two
- In Libyan culture, people often meet face-to-face and are more comfortable communicating face-to-face even with strangers. This also applies to foreign employees as they are used to this approach; therefore face-to-face semi structured interviews are the best method to obtain qualitative data
- Other researchers in Libyan studies also conduct structured face-to-face interviews; therefore it is a widely used and accepted approach to conduct fieldwork
- Previous successful studies have noted the beneficial effects of using a combination of interviews and questionnaires and have stated that it is the most valid and suitable research method to adopt in Arab countries.
- A combination of methods will help obtain the greatest amount of required data in order to meet the aims and objectives of the study.
- By using the same research design as other Arab researchers conducted in Libya, the consistency, validity and reliability of the study improves

. (Almehidi, A. A., 1997; Abuharris, A.T. 2005; Sayeh, F.S.2006; Abdussalam, S. M. 2006; Kumati, A.2008; Yuseif, I., 2010; Al-Bahussein, 2000, P 151).

6.8 Research Approaches:

Research approach is a common phrase that includes the terminology, tools, instruments and all other means that are used to examine the various factors that come into use once the research design has been planned. As mentioned previously, within social sciences there are two main approaches; quantitative and qualitative approach, Bryman (1998) states that the main dissimilarities between the two have been debated between academic researchers for many decades.

Many literatures question the value and of a quantitative method in comparison to a qualitative method. It is argued that the use of quantitative or qualitative research is dependent on the subject that is studied and from what perspective it is studied. The majority of research designs for most social science fields; including education, business management etc. are primarily formulated on qualitative data rather than quantitative data. This has now become acceptable and is part of the norm (Robson, 2002).

However, research design can still choose to use one or the other. For example social surveys are classed as being quantitative research because the results can produce statistics and the numbers can be analyzed. On the other hand, case studies are an example of qualitative research because the data will be interpreted and certain aspects of the study can be examined into context and it takes into account people's subjective perceptions (DeVaus, 2001).

Attributes of excellent research, according to Bellenger and Greenberg (1978) are as follows:

- Research must be conducted systematically (Kothari, 2005), all necessary steps in obtaining research should be specified and followed, research should also aim to be creative but guessing and intuition should not be used to arrive a conclusion; only concrete evidence should be used.

- Logic should be used to obtain high quality research; valuable methods of logical reasoning and logical processes of induction should be used so that a straightforward conclusion can be reached. Studies have shown that when research is used to arrive at conclusion, when logical reasoning has been incorporated, the conclusion reached is of greater value.

- Research should be established by experimental and observational methods so that the research can related to a situation. Also, empirical data means that the research results can be externally validated and are more reliable.

- Finally, good research should be able to be reproducible, so results can be verified if the study is repeated; this makes the research more reliable and valid.

6.9 Quantitative Data:

Quantitative research was defined by Bryman (2001) as distinctive research strategies that make use of the "collection of numerical data and exhibit a view of the relationship between theory and research as deductive, a predilection for a natural science approach, and as having an objectivist conception of social reality".

In relation to this study, quantitative research refers to socials surveys being used to collect quantifiable data that relates to a large number of people in order to test hypotheses; hence why they are used so often. However, Bryam (1988) noted that the approach taken for a social survey in comparison to the principles of quantitative research used in the sciences are different.

Quantitative data often can be categorized, hence why it is used so often in experimental and descriptive surveys. The main method for collected quantitative data is through standardized instruments used for observation; such as questionnaires, interviews etc. One main benefit of quantitative data is the ability to collect and analyze data to help break down complicated matters and assign them numerical values (Kerlinger,1986). Once numerical values are assigned, analysis becomes much easier as statistical analysis tools can be used to examine the data. The use of statistical programs makes the analysis of large population samples more straightforward.

6.10 Qualitative Data:

Miles and Huberman (1994) described qualitative data as “a source of well-grounded, rich descriptions and explanations of processes in identifiable local contexts”.

Whereas, Preissle, (2002) define qualitative research as: “a loosely defined category of research design or models, all of which elicit verbal, visual, tactile, olfactory, and gustatory data in the form of descriptive narrative like field notes, recordings, or other transcriptions from audio and videotapes and other written records and pictures or films”.

Similar to quantitative research, qualitative research produces findings that can conclude the analysis so the findings can be presented (Patton, 1990). In contrast to quantitative data qualitative data is words of value; the data is analyzed by categorizing and organizing into certain occurring patterns (Miles and Huberman, 1994). Another significant difference between quantitative and qualitative research, is that in qualitative research, in large population studies, the data must first be reduced before it can be inputted into digital programs for analysis so that significant patterns can be identified. The reduction in data is a continuous process that occurs even before the data is collected; as the researcher will have to decide which cases, research questions and research methods to use to collect data (Miles and Huberman, 1994).

Qualitative data can be collected via in-depth, open-ended, interviews, direct observation, written documents, administrative and archival records (Yin, 1994). Direct quotations obtained from open-ended questions can be used from the interview as data, usually, the quoted data involves aspects of people discussing their experiences and feeling and providing opinions and revealing their knowledge on a certain subject (Patton, 1990). Open-ended questions provide reliable and new information, as the interviewee cannot decide their answer beforehand; which usually occurs with questionnaires. It can be said that qualitative research is an investigative procedure because concepts are developed as a result of qualitative data results.

Samples collected for qualitative data is specific, whereas quantitative data samples tend to be more random. There are two main reasons why qualitative data samples are specific; firstly, because data collected has to be less and is continuously reduced and

limited and secondly because in social processes logic and consistency exist which cannot be addressed by random sampling (Miles and Huberman, 1994).

Patton (1990) stated that qualitative research makes it possible for researcher who wishes to evaluate and focus on selected issues in a greater depth and detail to do so; as no limits are set beforehand for categories that are to be analyzed.

According to Strauss and Corbin (1990) there are three major constituents of qualitative research: the first component is the source used for data collection. For this study interviews and observations were conducted with control representatives. The second component is the analytic tools used to analysis the data, this study uses categorized the answers and questions provided in accordance to the themes set in the framework. The last component is the use of written and oral reports.

This study will be adopting a qualitative approach in order to understand certain aspects of the research as a new architectural solution is required and a theory needs to be established too.

Qualitative research attempts to concentrate on real world problems, it does not endeavor to simplify the problem; instead it recognizes the problem as being multi-layered with many dimensions. Therefore, all aspects have to be studied in great detail (Leedy and Ormrod, 2010).

Woods (1999) warns researchers wanting to adopt a qualitative research method that it is the least strict and inflexible method and no strict guidelines exist for this type of research.

6.11 Selection of Research Method:

Once all the different types of research methods were reviewed, the researcher decided that a combination of both a quantitative method, such as a questionnaire, and a qualitative method, such as interviews will be the most appropriate approach to satisfy the objectives of this study (Ragsdell and Wilby, 2001) and attain more data producing a robust base for analysis of the research findings. The researchers decision to combine the two methods is further supported by Krueger and Casey (1994) stating that “more researchers are recognizing the benefits of combining quantitative and

qualitative procedures, resulting in greater methodological mixes that strengthen the research design".

Churchill (1995) believes that often when the problem is defined, one approach is more suitable over the other, but the researcher must recognize that it is most productive to use a combination of methods. For data collection, both methods are just as valuable and beneficial for research, the choice of which method to use depends on the research questions and the type of data the researcher wishes to obtain from the respondents (Wilson, 1996).

6.12 Addressing Ethics:

All social science researchers have ethical obligations to protect the welfare of the people they are studying. During each stage of data collection, the researcher had to evaluate the risk and effect it would have on participants. Specific ethical issues were identified by the author and dealt with appropriately.

The author told all respondents that their contribution was voluntary and they are free to not answer any of the questions asked.
It was explained to all participants that the information gathered from the interview is purely used as academic research for a PhD project and the research and objectives of the study were briefly read to the participants.
Participants were also reassured that all information obtained would be stored securely both in electronic and paper format, confidentiality would be kept throughout the study and all information would be analysed carefully. If participants had any problems or queries during the course of the PhD project, they were told they can contact the researcher at any time (Youssef, 2006 and Bryman 2001; 2008).

6.13 Covering Letter:

Before started the questionnaire and the interview covering letter was drafted. The aims of the letter were to:
- Personalize every form separately to expected participant.
- Explain the overall the aims and objectives of the study.

- To provide further explanation of the questionnaire.
- Encourage the respondent to complete a questionnaire by giving the average time. needed to fill out a form Due to the length of the questionnaire.
- To ensure confidentiality.

A copy of these letters (questionnaires and interview) are included in Appendix 3&5

6.14 Questionnaires:

A questionnaire is the most common research instrument used to collect quantitative data. A general definition of a questionnaire is a list of questions developed by a researcher to gather relevant data on a certain subject.

Questionnaires were defined by Gray (2006) as “research tools through which people are asked to respond to the same set of questions in a predetermined manner”.

Once the objectives of the study are discovered, a questionnaire can be created to help gather the data required to satisfy the objectives. Designing and planning a good questionnaire can be hard to do and is often the most crucial stage. Breakwell et al. (2000). states that it is very hard, almost impossible to design a questionnaire that will provide you withexactly what you need to know. In order to help improve the questionnaire, two main things were done in this study; firstly, performance management studies were completed and secondly a pilot study was done (details on the pilot study can be found in the next section).

Oppenhiem (2008) states that there are a number of factors that have to take into account when designing a questionnaire, such as; the type of research, size of sample and type of sample.

Questionnaires can be used on a large sample (Breakwell et al., 2000, p.159) and can be a distributed a number of ways, such as; respondents can complete the survey in front of the researchers, it can be sent to participants by post and sent back to the researchers, can be completed via email or online (in these two cases there will be no supervision) (Chapman and Mcneill and, 2005; Dane, 1990; Schonlau et al., 2002).

The use of questionnaires as a research instrument has many advantages and disadvantages. Table 6.3 illustrates the main advantages and limitations:

Table 6.3 : Advantages and Limitations of Questionnaires (Denscombe, 2007)

There are two main types of questions that can be used in questionnaires; open and closed. In most social science surveys, closed questions are used as it simplifies the

response choice for respondents and decreases the chance of receiving uncertain answers from respondents (Breakwell et al., 2000).

In order to produce a reliable and effective questionnaire, the author must ensure good quality questions are implemented. Therefore, the author has decided to apply some principles for questionnaire construction in order to avoid setting bad questions **(**Wang, 2008**;** Hague, 1993**)** they are as follows:

- Ensure all questions asked match the research objectives.
- Natural and familiar language should be used in the questionnaire.
- Questions should be clear, concise and easy to answer.
- Try and make questions interesting so the respondent is motivated to answer the questions.
- Avoid uncomfortable or hurtful questions.
- Respect the privacy of respondents at all times.
- Ask original questions that have not been asked previously.

6.15 Pilot Study

Before a final version of the questionnaire was produced a pilot study was conducted, the pilot questionnaires were randomly circulated to six construction companies in Libya. A surveying sample of 30 respondents was used for the pilot study. The questionnaires were given to project managers, site engineers and organization managers who have a great deal of experience within the construction field.

Pilot studies are often used in research to help the author perfect the surveying instrument designed to collect data and measure the effectives of potential responses, to test the questionnaire format to ensure all questions are asked in order to answer the research questions, and also to ensure the participants can easily understand all questions have no difficulties in completing the questionnaire (Bell, 1996 cited in Moore and Abadi, 2005).

The pilot study also gave the researcher the opportunity to gain experience in the relevant administrative procedures; such as contacting all respondent to explain the purpose of the survey. As a result of the pilot study, the questionnaire was altered and adapted in order to produce the final version of the questionnaire.

The main findings from the pilot study are outlined below:

- A cover page should use for the questionnaire.
- The first part of the questionnaire should ask questions regarding the organization the participant works for.
- Project organization should use information in relation to actual projects constructed in Libya; i.e. buildings, road and transportation, water and sewage projects etc.
- Some sentences and questions in the questionnaire need to be modified more details need to be added.
- Some questions were repeated, therefore need to be removed.
- Some questions need to be more clear and concise.
- Local factors what affect construction projected in Libya should also be added to the questionnaire, as recommended by local experts.
- Certain parts of the questionnaire are not structured well and need to be improved.
- The order of some questions needs to be rearranged so the questionnaire is more consistent and flows well.
- Some questions need to be omitted as they are not practical or realistic in respects to situations experienced in construction projects in Libya.

6.16 Questionnaire Structure:

After Literature review and the result of the pilot study two main sections of the final questionnaire has been designed to identify the factors affecting the performance of construction projects and the impact of the performance of project managers within construction companies in Libya. In addition, other local factors have been added as recommended by local experts. The Factors have been classified as follows:

Time**,** cost, quality Factors, Client Satisfaction Factors, people Factors, Health & Safety Factors, Problem-Solving Factors, Decision-Making Factors, Mutual Trust Factors, Project Manager Factor, Communication Factor, Work Environment factors

The two sections of the questionnaire are briefly described below:

Section 1: asks respondents personal data, Age, Gender, how long they worked for the company and their position to ensure they have sufficient knowledge in regard to the company practice and environment.

Section 2: Factors that influencing the success projects and Project managers' performance skills questions. See Appendix 4.

6.17 Statistical Analyses:

6.17.1 Validity and Reliability

Saunders et al. (2009) states that the "*validity and reliability of the data collected enables the researcher assess the questions"*.

Regardless of the method used to obtain data, the data must be analyzed closely to see how reliable and valid it is. Reliability is determined by the degree to which a test would produce similar results on all occasions under continuous occasions. If the test produces different responses on all occasions, then the data collected is classed as unreliable.

On the other hand, validity can be defined as whether an element does in fact measure or describe what it is supposed to measure or describe. Using these definitions, it is possible for data to be reliable but not valid e.g. if the same response was obtained each time but it was not measuring what it was supposed to be measuring. However, the data is unreliable, it is also not valid.

6.17.2 Methods of Achieving Validity and Reliability

All research studies aim to collect data that is both reliable and valid. There are two different types of validity; external and internal; both which apply to this study (Ellram, 1996; Ghauri and Gronhaug, 2005; Yin, 2003). The data in this study is also construct valid as multiple sources of evidence and chains of evidence were used (Yin, 2003). The use of mixed methods for data collections also increases the validity of research (Leedy and Ormrod, 2010).

6.18 Interview

Apart from using questionnaires, this study will also conduct face-to-face interviews, this way qualitative data can be obtained to deal with different subjective variables that need to be investigated. After exploring the best way to use this instrument to

validate out come from the questioners, the author decided to conduct structured face-to-face interviews for this study; as it is a well-known method commonly used in Libya.

Interview was defined by Gray (2006) as "*communication between people in which one person has control of the researcher*".

Data collection via an interview gains an insight into people's views, reactions, opinions and experiences (Denscombe, 2007, p.174). An interview also allows the researcher to obtain personal information and a high quality return rate is very important. However, as Gray stated, some respondents may have difficulty understanding the languages and may misinterpret the questions asked therefore compromising the quality of answers (Gray, 2006, pp.214-215). Give the information to the respondent about the research question or research aims, this maximises the utility of this method (Johnson in Gubrium and Holstein, 2001). Choose suitable place for the interview which the participant feels comfortable and they can express their views freedom (Weiss, 1994).

6.19.1 Selecting an Interview Approach

In social science studies different interview approaches are widely used by many researchers for data collection. There are many types of interview approaches that can be used to gather information, expressions, views and beliefs, such as: structured interviews, semi-structured interviews, non-directive interviews, focused interviewed, and informal conversational interviews. Face-to-face interviews can further be split into: face-to-face in depth unstructured interview, structured face-to-face interview, and semi-structured face-to-face interview. The type of interview chosen will mainly depend on the aims of objectives of the study. As mentioned previously, this study will adopt a structured face-to-face interview. After collected questionnaires survey the researcher asked project managers if there is opportunity for interviewing. Five project managers in construction companies have been interviewed in Tripoli Libya.

Structured interviews are pre-planning; so the interviewer can ask each respondent the same questions in the same way and limited time. When using a structured interview, it is to ensure comparability across the sample. However it is important that

respondents have idea about the interview topic before they start and trained to deal with. (Fox 2009)

It is important that in a structured interview must use the interview instructions:

- Interview the appropriate respondent to get the appropriate information.
- Follow the correct order of the data and remove the questions not required.
- No time for personal opinions.
- Write in full the open-ended questions' responses.
- Listen to the respondent carefully and give them chance to explain (Creswell, 1998, p. 125).

There are many advantages and disadvantages to adopting a structured face-to-face approach; they are summarized in the table 6.4 below:

Table 6.4: Advantage and disadvantages of interviews. www.sociology.org.

The interviewer decided it would be best if an interview schedule and technique was prepared. Table 6.5 below shows some of the important interview schedules and techniques.

Table 6.5: Interview Schedule and Techniques (adopted by Langdridge, 2003)

The Interview has been done to supplement and support the data analysis, the major aims of the interviews were to investigate the validity and support the data collection of the findings from the questionnaires survey, after 183 questionnaires were collected and analyzed. Five project construction managers from different companies in Tripoli were selected to validate my data analysis and develop guidelines for implementing BSC in Tripoli construction companies. The interviews were conducted in structured way due to time constrain and give more freedom to the interviewees, Also cover letter sent out to the managers before starting the interview, copy of the letter was attached in Appendix 5 All the interview questions and comments raised by the interviewees lists in Appendix 6&7.

6.20 Summary

An overview of different research methods were discussed in this chapter and an analysis of different method were conducted in order to justify the methods chosen. A brief explanation of qualitative and quantitative research was also done and ethical obligations were also discussed.

This chapter highlighted the importance of choosing research methods best suited to the aims and objectives of the research. An extensive literature review was conducted in a previous chapter regarding the different styles of methodology and questionnaires and interviews were also included.

Chapter Seven

DATA COLLECTION AND ANALYSIS

7.1 Introduction

In the first few chapters of the thesis a literature review was conducted, the different research methodologies available were described and the chosen research methodology was justified. This chapter will now critically analyze performance management within the Libyan construction industry based on findings from the questionnaire. A variety of construction companies took part in the questionnaire; 300 written questionnaires were personally delivered to managers of construction companies in October 2013. 183 questionnaires were sent back to the researcher, giving a response rate of 61%. The answers were then checked, edited, coded and analyzed.

The results presented in this chapter are based on data gathered from respondents regarding their opinions of the performance of project managers amongst other dependent variables. Descriptive statistics, such as percentages, will be used to present the demographical data; the dependent variables will be examined using factor analysis. Factor analysis is ideal for the dependent variables because it breaks down the data to convenient size.

7.2 Frequency and Percent statistics (Descriptive Analysis):

Descriptive statistical analysis was used to identify frequencies and percentages to answer all of the questions in the questionnaires.

The presentation of the descriptive analysis begins with demographic characteristics of the respondents. These characteristics include gender, and age distribution of the respondents, the author explained all in detail in the following section.

7.3 **Respondents background**:

Tables from 7.1 to 7.5 present the results of the descriptive analyses. The aim (as noted previously) was to help provide an understanding of the profile of the respondents. Knowing the background of the respondents should help generate confidence in the credibility of data collected.

7.3.1 Respondents Gender:

Table 7.1 shows that the presence of female in the construction industry is relatively less and their contribution in the survey is only 7.1% if compare to the male respondent was 92.9%

Gender	Frequency	(%)
Male	170	(92.9%)
female	13	(7.1%)
	183	100%

Table 7.1 Distribution of Respondent `s Gender

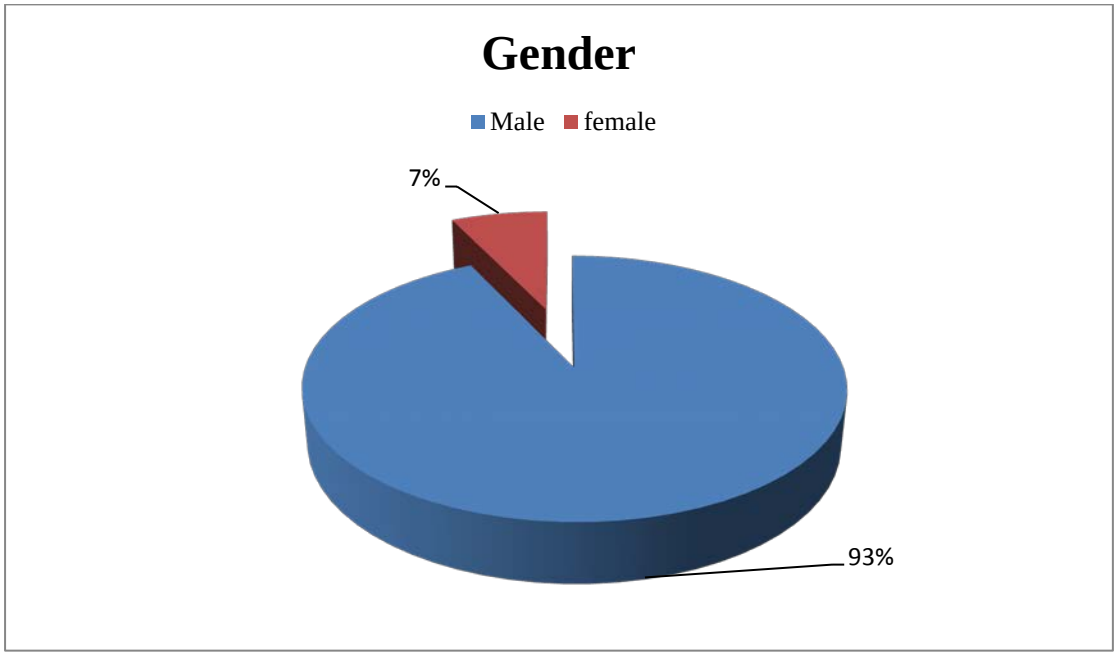

Figure 7.1 Distribution of Respondent `s Gender

7.3.2 Respondents Ages:

From the data collection and analysis most of the respondent are middle age project managers, it was found that the highest percentage of respondent 30% who were aged between 31-40 years old, followed by the lowest percentage of respondent aged less than 25 years old was 3.8%

Table 7.2 shows the rest of the results.

Age	**Frequency**	**(%)**
Less than 25 years old	7	(3.8 %)
26-30 years old	30	(16.4%)
31-40 years old	56	(30.4%)
41-50 years old	50	(27.3 %)
50+ years old	40	(22.8 %)
	183	100%

Table 7.2 Distribution of Respondent`s Age

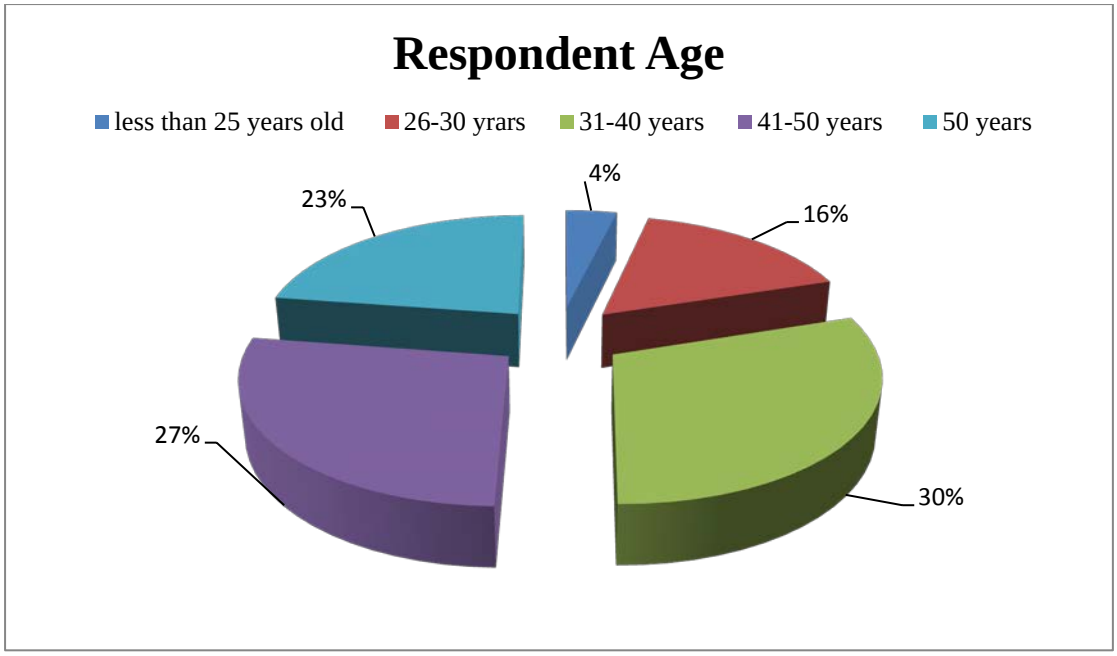

Figure 7.2 Respondent`s Age

7.3.3 Respondent Education Qualification:

The analysis shows the education back ground, it can be seen in the table 7.3 most of the respondents were obtained Bachelor degree (49.7%) and (30%) are hold Diploma Degree, master degree 12% and finally 8% were obtained PhD.

Education	**Frequency**	**(%)**
Diploma	55	(30%)
Bachelor	91	(49.7%)
Master	22	(12%)
PhD	15	(8%)
	183	100%

Table 7.3 Respondent`s Education Qualification

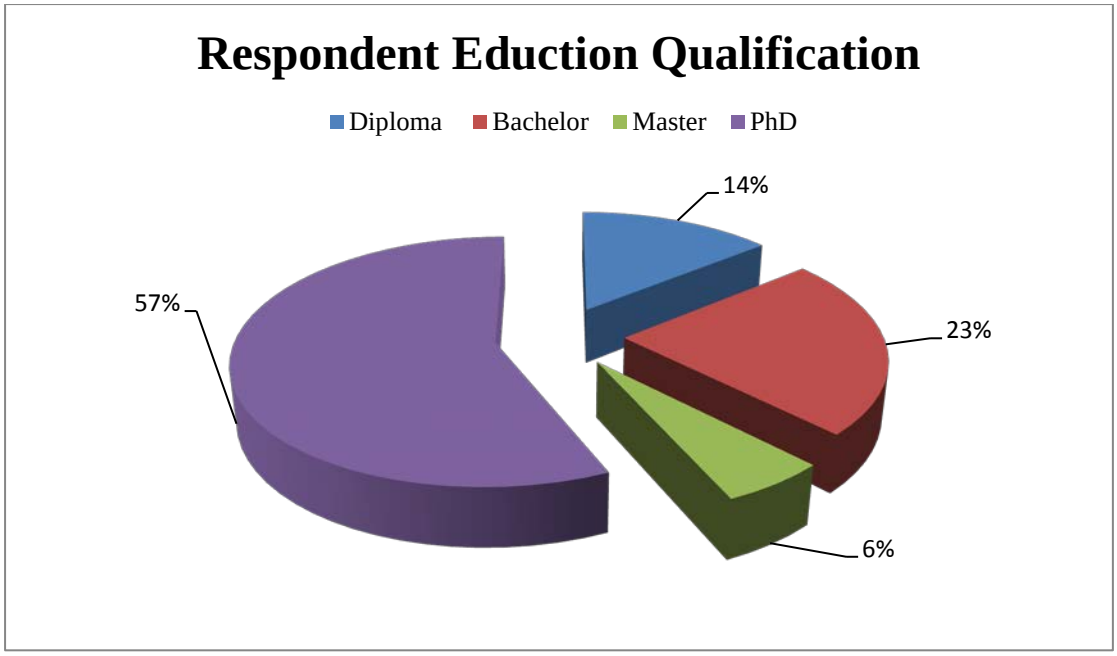

Figure 7.3 Respondent education qualifications

7.3.4 Respondent Positions:

From the analysis it can be seen in table 7.4 that the senior project managers represented 42.5%of the total, followed by project director 30%, followed by managing director 12.5% and others 15% such as project engineers and site managers.

Job description	Frequency	(%)
Project director	55	(30 %)
Senior project manager	78	(42.5 %)
Managing director	23	(12.5 %)
Others	27	(15 %)
	183	100%

Table 7.4 Respondent`s Job Description /Position

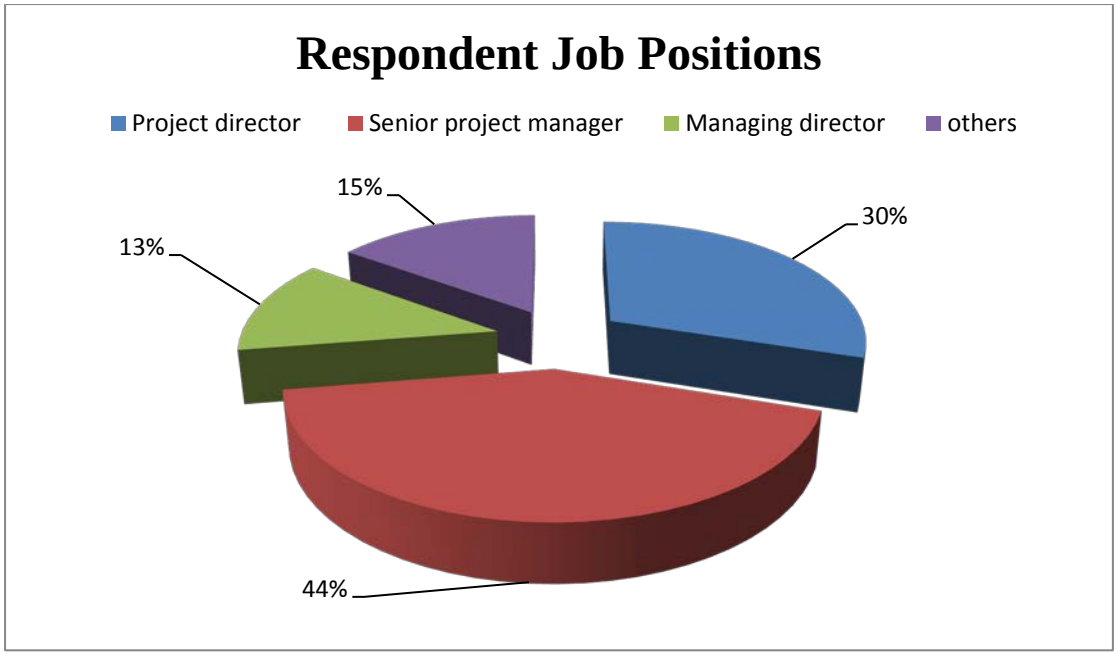

Figure 7.4 Respondent`s Job Description /Position

7.3.5 Respondent years of experience

Regarding to job experiences table 7.5 shows the years of experience in construction industry, the data analysis indicate that the highest percentage is 40.9% being more than 20 years' experience in construction industry and the lowers job experiences was 12.5% for 3-5 years' experience in construction industry.

Experience	Frequency	(%)
3-5 years	23	(12.5%)
6-10 years	27	(15 %)
16-20 years	60	(32.7 %)
More then 20	75	(40.9 %)
	183	100 %

Table 7.5 Respondents' years of experience

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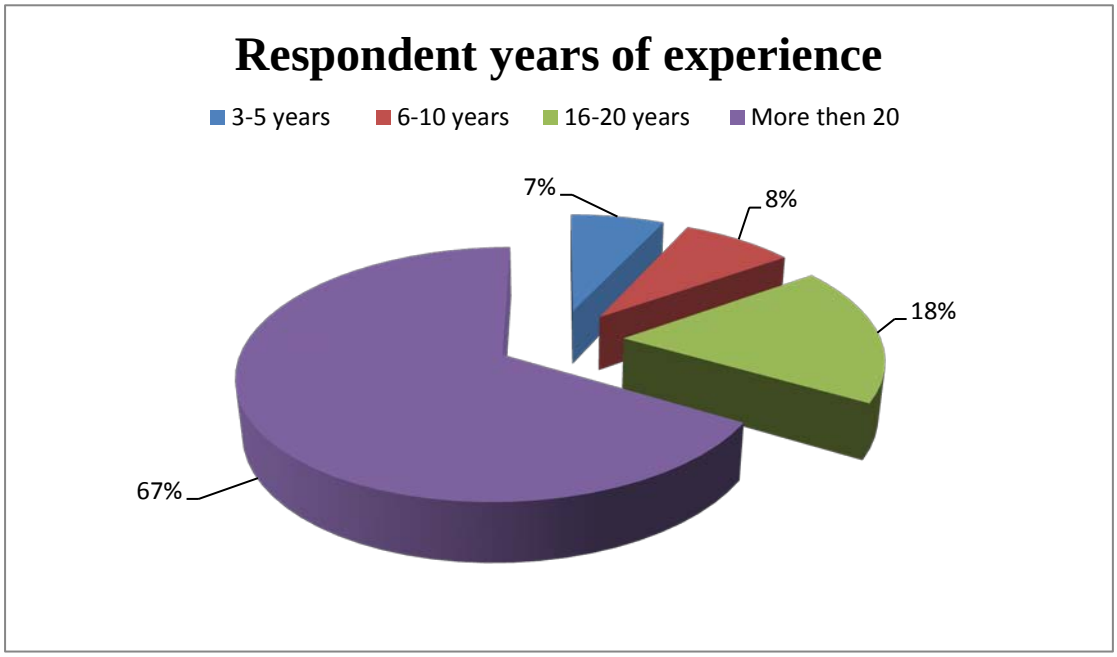

Figure 7.5 Respondents' years of experience

7.4 Validity Test:

The validity of the questionnaire will be tested in this section. Pilot and Hungler (1985) defined validity as the extent to which an instrument measures what it is supposed to measure. Various different assessment approaches and aspects can be considered in order to measure the validity of an instrument. Popular ways of measuring validity is using a statistical approach, such as criterion-related validity and construct validity. As a general rule, in order to determine the validity of the questionnaire two statistical tests should be conducted. The first test that will be conducted in Spearman's Rank Correlation- this is the criterion related validity test. Spearman's test quantifies the correlation coefficient between each paragraph in one field and in the total field. The Spearman test will also be used for the second test (the structure validity test). However, in this aspect the validity of each field is measured against the validity of the whole questionnaire; i.e. the correlation coefficient between one field and all the fields with a similar level will be measured. The subsections below will briefly describe the differences between the two tests.

7.5 Criterion-related validity test:

For the criterion-related validity test, the correlation coefficient for each group factor is calculated as well as the total for all factors. The p-values (Sig.) were less than 0.01 for all factors; therefore the correlation coefficient for each field is significant at a=0.01. This means that the paragraph for each field is consistent and is measuring what it is supposed to measure. From Table 7.9 below shows the factors calculated and the results for the criterion-related validity test.

7.6 Structure validity test:

The structure of the questionnaire was assessed the calculating the correlation coefficient for each paragraph against the whole questionnaire. Table 7.6 below presents the structure validity test findings:

NO.	field	Spearman correlation coefficient	P-value (sig)
1.	Cost Factors	0.842	0.000**
2.	Time Factors	0.805	0.000**
3.	Quality Factors	0.713	0.000**
4.	Solving Problem Factor	0.773	0.000**
5.	Client Satisfaction Factors	0.684	0.000**
6.	Mutual Trust Factors	0.771	0.000**
7.	Project Managers	0.797	0.000**
8.	People Factors	0.717	0.000**
9.	Health and Safety Factors	0.784	0.000**
10.	Decision Making Factors	0.727	0.000**
11.	Communication Factor	0.717	0.000**
12.	work Environment Factors	0.609	0.000**

** Correlation is significant at the 0.01 level

As can be seen from table 7.6 all *p*-value (Sig.) are less than 0.01, therefore all factor are significant and it can be said that the questionnaire is valid and measures what it is supposed to measure in order to satisfy the aims of the study.

7.7 Reliability statistics:

The reliability of the questioners study will be measured in this section. (Pilot and Hunger ,1985) define the reliability of an instrument as the degree of consistency in which factors are measured in the way they are supposed to be measured. When measured repeatedly, the smaller amounts of variations produced, the higher the reliability of the instrument. The reliability measure is often associated with the stability and consistency of a measuring tool. A reliability test works by testing a sample on two different occasions and comparing the scores generated by calculating a reliability coefficient (Polit & Hunger, 1985).

To measure internal consistency, Cronbach's coefficient alpha (George and Mallery, 2003) was created to see whether all items in an instrument measures the same thing. In other words, Cronbach's coefficient alpha measures the reliability of each field within the questionnaire. The usual range for Cronbach's coefficient alpha is between 0 and 1, the higher the number, the greater the internal consistency of items used as a measuring tool. A large number of variables can affect the alpha value; therefore there is no optimum alpha value, but generally, from table 7.7 the following scale can be used to rank the alpha value:

Table 7.7 alpha value scale.

$0.9 \leq \alpha \leq 1.0$	**Excellent**
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$0.0 \leq \alpha < 0.5$	Unacceptable

Table 7.8 below presents the Cronbach alpha value for each item of the questionnaire and the overall questionnaire. The alpha value for the questionnaires ranged from 0.707 to 0.879; which is quite high and indicates that the reliability of the questionnaire is good or acceptable. The alpha value for the overall questionnaire was

0.812; which suggests the questionnaire has a good reliability. Therefore, from the results of Cronbach's coefficient value, it can be said that the questionnaire is valid, reliable and ready to distribute to participants.

Table 7.8: Calculated Cronbach's Alpha value for each item of the questionnaire

No.	Field	Cronbach's Alpha
1.	Cost factors	0.869
2.	Time factors	0.834
3.	Quality factors	0.815
4.	Solving problem factor	0.757
5.	Client Satisfaction factors	0.707
6.	Mutual trust factors	0.746
7.	Project managers	0.879
8.	People factors	0.870
9.	Health and Safety factors	0.829
10.	Decision making factors	0.757
11.	Communication factor	0.840
12.	work Environment factors	0.849
	Total	0.812

7.8 Criterion-Related Validity Test:

Table 7.9 below shows the correlation coefficient of time factors and the proportion it contributes to factors.

No.	Item	Spearman Correlation Coefficient	P-Value (. Sig)
1	Material Shortage	0.713	0.000**
2	Delay in Materials Being Delivered	0.644	0.000**
3	Alteration in the Price of Materials	0.784	0.000**
4	Lack of Equipment	0.773	0.000**
5	Material Transportation	0.885	0.000**
6	Site Storage	0.613	0.000**
7	Poor or Inadequate Material Quality	0.805	0.000**
8	Equipment Failure/ Broken Equipment	0.717	0.000**
9	Unsuitable Equipment used for the Job	0.866	0.000**
10	Lack of Skilled Manpower	0.605	0.000**
11	Project Size	0.717	0.000**
12	Project Location	0.639	0.000**
13	Modifications to the Initial Design	0.807	0.000**

14	Alterations to the Scope and Basis of the Project	0.684	0.000**
15	Lack of Communication between the Contractor and other Parties involved in the Project	0.771	0.000**
16	Weak Coordination from the Contractor with other Parties involved in the Project	0.842	0.000**
17	Poor and Ineffective Planning and Organization of the Project by the Contractor	0.633	0.000**
18	Subcontractors or Suppliers Receiving late Payment from Contractors	0.727	0.000**
19	Contractor Receiving late Payment from Client	0.792	0.000**
20	Lack of direction by the Consultant Engineer with other Parties Involved	0.797	0.000**
21	Order of Priorities Changed by the Client	0.649	0.000**
22	Bureaucracy in Government Agencies	0.703	0.000**
23	Government Policy Changes	0.822	0.000**
24	Poor Contract Management	0.609	0.000**

** Correlation is significant at 0.01

The table above showed the criterion-related validity test for time factors, the correlation coefficient for time factors were calculated. The p-values (Sig.) were less

than 0.01 for all factors; therefore the correlation coefficient for each field is significant at a=0.01. This means that the paragraph for each field is consistent and is measuring what it is supposed to measure.

Table 7.10 below shows the correlation coefficient of Cost:

NO.	item	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Changes made in design	0.727	0.000**
2.	Volatile Weather Conditions	0.652	0.000**
3.	Lack of Organization and Management at the Design Phase	0.842	0.000**
4.	Alterations in Owner's brief	0.797	0.000**
5.	Planning Costs and Monitoring not Correctly followed during Pre and Post Contract Stages	0.832	0.000**
6.	Provisional Works Retraced	0.761	0.000**
7.	Failure to Report Costing during Construction Stage	0.633	0.000**
8.	Scarce Experience in Project type	0.709	0.000**
9.	Lack of Knowledge in Local Regulations	0.792	0.000**
10.	Insufficient Project Preparation, Planning and Implementation	0.804	0.000**
11.	Delay in Construction as a result of raw Materials and Equipment being delivered	0.649	0.000**

	Late by Contractors		
12.	Change in the Extent of the Project as a Result of Government Policies	0.731	0.000**
13.	Incorrect Site Location	0.822	0.000**
14.	Weak Organizational Structure, Failure to Manage Labour, Ineffectiveness of Technology	0.677	0.000**
15.	Inexperienced Technical Consultants and Ineffective Foreign Collaboration Agreements	0.718	0.000**
16.	Inability to Recycle Materials as a Result of Lack of Managerial Knowledge	0.703	0.000**
17.	Lack of Experienced Site Workers	0.836	0.000**
18.	Over time Working hours	0.611	0.000**
19.	Hiring Skilled Technicians to Work	0.783	0.000**
20.	Contractor's inability to adopt the Project to its Environment	0.842	0.000**
21.	Poor Communication of bad results as a result of the economical Political Situation to Stakeholders	0.609	0.000**

** Correlation is significant at 0.01

The table above described the criterion-related validity test for cost factors, the correlation coefficient for cost factors were calculated. The p-values (Sig.) were less than 0.01 for all factors; therefore the correlation coefficient for each field is significant at a=0.01. This means that the paragraph for each field is consistent and is measuring what it is supposed to measure.

Table 7.11 below shows the correlation coefficient of Quality factors

No.	item	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Coherence to Specification	0.755	0.000**
2.	Recruitment of High Experience and Qualified Workers	0.795	0.000**
3.	High Quality of Equipment and Raw Materials Used in the Project	0.775	0.000**
4.	Managers Involvement in Decision Making	0.565	0.000**
5.	Implementation of Quality Assessment Systems within the Organization	0.763	0.000**
6.	Quality Training and Meetings	0.678	0.000**

** Correlation is significant at 0.01

The table above illustrated the criterion-related validity test for quality factors, the correlation coefficient for quality factors were calculated. The p-values (Sig.) were less than 0.01 for all factors; therefore the correlation coefficient for each field is significant at a=0.01. This means that the paragraph for each field is consistent and is measuring what it is supposed to measure.

Table 7.12 Correlation coefficient Client Satisfaction Factor:

No.	Item	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Adequate Communication between Owner and Project Managers	0.511	0.000**
2.	Quality of the project manager leadership skills	0.606	0.000**
3.	Speed and Reliability of Service Provided for the Owner	0.747	0.000**
4.	Number of Disagreements between Owner and Project Contractors	0.681	0.000**
5.	Number of Revisions Made to Design	0.654	0.000**

** Correlation is significant at 0.01

The table above demonstrated the criterion-related validity test for client satisfaction factors, the correlation coefficient for client satisfaction factors were calculated. The p-values (Sig.) were less than 0.01 for all factors; therefore the correlation coefficient for each field is significant at a=0.01. This means that the paragraph for each field is consistent and is measuring what it is supposed to measure.

Table 7.13 Correlation coefficient People Factors:

No.	Item	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Employee's attitude towards the Project	0.847	0.000**
2.	Employee Recruitment and Capability	0.829	0.000**
3.	Employee Motivation	0.872	0.000**
4.	Employee's Work Satisfaction Levels	0.881	0.000**

** Correlation is significant at 0.01

The table above showed the criterion-related validity test for People factors, the correlation coefficient for People factors were calculated. The p-values (Sig.) were less than 0.01 for all factors; therefore the correlation coefficient for each field is significant at a=0.01. This means that the paragraph for each field is consistent and is measuring what it is supposed to measure.

Table 7.14 Correlation coefficient Health & Safety Factor

No.	Item	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Implementation of Health & Safety Factors within the Organization	0.778	0.000**
2.	Location of Project	0.816	0.000**
3.	Number of Reported accidents During Project Construction	0.807	0.000**

4.	Project Assurance Rate	0.888	0.000**

** Correlation is significant at 0.01

The table above explained the criterion-related validity test for health & safety factors, the correlation coefficient for health & safety factors were calculated. The p-values (Sig.) were less than 0.01 for all factors; therefore the correlation coefficient for each field is significant at a=0.01. This means that the paragraph for each field is consistent and is measuring what it is supposed to measure.

Table 7.15 Correlation coefficient Work Environment Factor

No.	Item	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Air Quality	0.874	0.000**
2.	Noise Levels	0.810	0.000**
3.	Waste and Pollution around Site location	0.866	0.000**
4.	Climate Conditions within the Site	0.777	0.000**

** Correlation is significant at 0.01

In the table 7.15 the criterion-related validity test for work environment factors, the correlation coefficient for work environment factors were calculated. The p-values (Sig.) were less than 0.01 for all factors; therefore the correlation coefficient for each field is significant at a=0.01. This means that the paragraph for each field is consistent and is measuring what it is supposed to measure.

Table 7.16 Correlation coefficient Communication Factor

No.	Item	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Effective Communication Systems in Place to Contact Customers	0.703	0.000**
2.	Effective Communication Systems in Place to Communication with Suppliers/Subcontractors.	0.836	0.000**
3.	Effective Communication Systems in Place between Top Management and Employees.	0.611	0.000**
4.	Changes in Organization Policy and reason for Changes well Communicated to Employees	0.783	0.000**
5.	Customers can easily Contact the Company	0.842	0.000**

** Correlation is significant at 0.01

The table 7.16 showed the criterion-related validity test for communication factors, the correlation coefficient for communication factors were calculated. The p-values (Sig.) were less than 0.01 for all factors; therefore the correlation coefficient for each field is significant at a=0.01. This means that the paragraph for each field is consistent and is measuring what it is supposed to measure.

Table 7.17 Correlation coefficient Project Manager Factor:

No.	Item	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Project Manager's Previous Experience	0.842	0.000**
2.	Competence of the Project Manager	0.797	0.000**
3.	Project Manager Leadership Skills	0.832	0.000**
4.	Technical Capability of the Project Manager	0.761	0.000**
5.	Project Manager's authority and ability to Make day-to-day Decisions	0.633	0.000**

** Correlation is significant at 0.01

Table 7.17 the criterion-related validity test for project manager factors, the correlation coefficient for project manager factors were calculated for. The p-values (Sig.) were less than 0.01 for all factors; therefore the correlation coefficient for each field is significant at a=0.01. This means that the paragraph for each field is consistent and is measuring what it is supposed to measure.

Table 7. 18 Correlation coefficient Mutual Trust Factors:

No.	Item	Spearman Correlation Coefficient	P-Value (Sig.)
x1.	Legal Disagreements made between Various Project Parties	0.727	0.000**
2.	The type of Construction Contract produced (applies to Turnkey Construction Projects only)	0.652	0.000**
3.	Original Project Time Frame is too Short	0.842	0.000**
4.	Unproductive Time Penalties if the Project is Finished Late	0.797	0.000**
5.	Project Bidding type and the Project being awarded to the Lowest Bidder	0.832	0.000**

** Correlation is significant at 0.01

The table described the criterion-related validity test for Mutual Trust factors, the correlation coefficient for Mutual Trust factors were calculated for. The p-values (Sig.) were less than 0.01 for all factors; therefore the correlation coefficient for each field is significant at a=0.01. This means that the paragraph for each field is consistent and is measuring what it is supposed to measure.

Table 7.19 Correlation coefficient Decision-Making Factors:

No.	Item	Spearman Correlation Coefficient	P-Value (Sig.)
1.	The ability of Owners to Make Fast Decisions and Update the register	0.731	0.000**
2.	Decisions made without Considering all the Implications	0.822	0.000**
3.	Effective Supervision and Control in Place by the Organization	0.677	0.000**
4.	Effective Human Resource Management Standards in Place	0.718	0.000**
5.	The Decision-Making Process is a deliberate Logical Process	0.703	0.000**

** Correlation is significant at 0.01

On the table 7.19 the criterion-related validity test for decision-Making factors, the correlation coefficient for decision-Making factors were calculated. The p-values (Sig.) were less than 0.01 for all factors; therefore the correlation coefficient for each field is significant at a=0.01. This means that the paragraph for each field is consistent and is measuring what it is supposed to measure.

Table 7.20 Correlation coefficient Problem-Solving Factor:

No.	Item	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Effective Communication made between the Owner and other Parties involved in the implementation of the Project	0.677	0.000**
2.	Owners offer rewards for Milestones reached in the Project	0.718	0.000**
3.	Adequate Level of Equipment used in the Construction Site	0.703	0.000**
4.	Effective Project Design that has no errors	0.836	0.000**

** Correlation is significant at 0.01

The table 7.20 showed the criterion-related validity test for Problem-Solving factors, the correlation coefficient for Problem-Solving factors were calculated. The p-values (Sig.) were less than 0.01 for all factors; therefore the correlation coefficient for each field is significant at a=0.01. This means that the paragraph for each field is consistent and is measuring what it is supposed to measure.

8. **9 Factor Analysis (FA):**

Factor Analysis (FA) was defined by Kiplinger (1996) as a; "*powerful and indispensable method of construct validation*". FA is a statistical technique used to represent a set of variables and translate them into a smaller number of hypothetical variables or factors (Norusis 1994, Hedderson 1993, Pallant 2001; 2007 and Vidalakis *et al.* 2007)

.The term 'a data reduction technique that correlates data variables' was used by Chatfield and Collin (1992) to describe Factor Analysis

FA identifies a number of factors and forms correlation and links between the factors in order to reduce them so analysis can be easier. The link between the factors can then be assessed to see how they interact and the correlation matrix can be examined and a correlation coefficient can be calculated. To summarize, the main aim of the technique is to extract all variances from the data and group within each factor.

7.9.1 Results of Factor Analysis:

A five point likert scale was used in the questionnaire where (1) not very important and (5) very important. Ninety one statements were written in the questionnaire to which the respondent had to identify how important they felt the statements were. Factor analysis was then used to inter-correlate the ninety one items. An exploratory factor analysis (EFA) was adopted; this is based on the principal component analysis (PCA) with Promax rotation. A PASW (Predictive *Package* for the Social Sciences) version 20.0 was also used to detect the factor structure of the correlation matrix. The end result revealed a presence coefficient of 0.3 and a Kaiser Meyer Oklin (KMO) was also used. Sampling adequacy results was 0.728 and Barletts test of sphericity (approximately chi-squared $p<0.0005$) supported the structure of the correlation matrix .(Field, 2005, Kinnear and Gray, 2006)

Using the KMO model, a value lower than 0.5 is not acceptable, between 0.5 and 0.7 is average, between 0.7 and 0.8 is good and between 0.8 and 0.9 is great and any value above 0.9 is excellent. Therefore, using the scale, the obtained value of 0.728 is good. It is important to note that a value below 0.5 is unacceptable but a high KMO value means that very detailed analysis was undertaken (Norusis; 1994, Gaur *et al*.; 2004, Kaiser 1974). The results of KMO can be confirmed using the Barlett's test of Sphericity and the Chi-squared test, which was significant ($p<0.0005$); therefore this means that PCA can be meaningfully applied (Kim and Mueller 1978, Klin 1994; Cattell, 1979). PCA was used to develop a structure matrix of variables after rotation where the number of components determined is based on the Eigen value for each component; which must be more than 1 (Torbica; 1997).

7.10 Factor Analysis of Dependent Variables:

As there were a large number of variables used in this study, a factor analysis had to be used to establish which variables were grouped together and were measuring the same factors. Therefore, factor analysis was used to help develop a framework and group all variables together (Hair et al, 1998; Norussis, 2000).

It is very important to validate the research instrument whilst using a factor analysis to ensure the results are reliable (Field, 2000). In order for results to be reliable, the scale should constantly reflect the construct it is measuring. Therefore a reliability test can be used to measure the uniformity of the five-point scale. The 12 dependant factors shown in table 7.21 are subjected to Cronbach's reliability test and the results of the rest are presented in table 7.22 the table shows that Cronbach alpha attained a overall high of 0.812; which means that the overall reliability of the research instrument for factor analysis is high. Afterwards, factor analysis was then used on the data, mainly principal component analysis (PCA) was used with a Promax roation.

It can be used to identify distinguishing variables (see for instance Brace et al, 2003; Field, 2000; Field, 2005).

Table7.21: Nominated Success criteria for Libyan construction projects

Dependent variables
1- Project Cost (CSF1)
2- Project time (CSF2)
3- Project quality (CSF 3)
4- Solving problem (CSF 4)
5- Client satisfaction (CSF 5)
6- Mutual trust (CSF 6)
7- Project managers (CSF 7)
8- Stakeholders (CSF 8)
9- Decision making (CSF 9)
10- Communication (CSF 10)
11- Work environment (CSF 11)
12- Health and Safety (CSF12)

Table 7.22: Cronbach's Reliability Analysis

Item-total Statistics	Scale	corrected		Alpha if item deleted
	Mean if item deleted	Variance if item deleted	Item total correlation	
CSF1	58.8053	56.3205	0.842	0.869
CSF2	58.3421	51.7114	0.805	0.834
CSF3	58.3421	52.4543	0.713	0.815
CSF4	58.5281	53.3253	0.773	0.757
CSF5	58.3667	54.1687	0.684	0.707
CSF6	58.7386	53.9888	0.771	0.746
CSF7	58.6105	53.6356	0.797	0.879
CSF8	57.9842	57.3610	0.717	0.870
CSF9	57.9842	55.8610	0.784	0.829
CSF10	57.8772	58.4929	0.727	0.757
CSF11	57.7702	59.1768	0.717	0.840
CSF12	58.3053	56.2969	0.609	0.849

7.11 Communalities:

The definition of Communality is the sum of squares of the factor loading over all the factors. The communality result is presented as "0" and the standard deviation of all variables was 1. The proportion of variance as accounted for by the common factor should be 1 for each variable tested (Comrey and Lee, 1992).

The tables 7.23 below show the results of the communalities using Predictive Package for the Social Sciences before and after extraction. The communality is a proportion of common variance within each variable. Before extraction all values were 1 (the column labelled initial shows this), after extraction results are presented in the column labelled extraction; this column reveals the common variance PASW output,The communalities presented in table 7.23 are estimated variances for each variable hence it is always equal to 1.0 for correlation analysis, as can be seen they are all high, this indicates that the extracted components represent each variable well.

Before PCA was undertaken, communalities were calculated. Table 7.23 presents the results. Communality shows the proportion a variables contributes to the total proportion of other variables included in the analysis. It can be used to decide which variables should be extracted using the varimax rotation and in determining the sample size adequacy (Field, 2000; 2005). Once all variables were extracted, the average communality value was greater than 0.6; which suggests that the sample size sufficient.

Table (7.23) Communalities

	initial	extraction
Project Cost	1.000	.662
Project Time	1.000	.774
Project Quality	1.000	.812
Solving problem	1.000	.876
Client Satisfaction	1.000	.643
Mutual trust	1.000	.726
Project managers	1.000	.773
People	1.000	.662
Health and Safety	1.000	.777

Decision making	1.000	.578
Communication	1.000	.692
work Environment	1.000	.867

Extraction method: Principle Component Analysis

Tables 7.24 and 7.25 presented below show the results after the data underwent Kaiser Meyer Olkin (KMO) and the correlation matrix was produced

Table (7.24)KMO and Bartlett's Test

Kaisermeyer olkin Measuring of sampling adequacy		**.758**
Bartalett's test of sphericity	Approx.Chi- square	531.149
	DF	105
	Sig	.000

The KMO value obtained for the data was 0.75; this again suggests that the sample size is an adequate size for factor analysis. As the KMO value was high, anti-image matrices did not have to be used to check the adequacy of the sample further. Next, the Bartless test of sphericity was used to establish any potential relationships between the clusters of factors. A sphericity value of 531.149 was calculated, the associated significance was 0.000 (as can be seen in Table 7.25). From the results it can be seen that the population matrix is not an identity matrix. An identity matrix occurs when the elements of the diagonals are 1.0 and non-diagonals are 0.0 (Field, 2000). The results mean that successful criteria were identified that share common underlying associations and that clusters do exist within the data.

Table 7.25 Correlation Matrix of Factor Analysis

Factor	CSF1	CSF2	CSF3	CSF4	CSF5	CSF6	CSF7	CSF8	CSF9	CSF10	CSF11	CSF12
CSF1	1.000 0											
CSF2	.321	1.000 0										
CSF3	.292	.082	1.000 0									
CSF4	.095	.565.	.518	1.000 0								
CSF5	.071	..401	.289	.475	1.000 0							
CSF6	-.029	.147	.137	.363	.651	1.000 0						
CSF7	.435	.375	.082	.117	.282	.162	1.000 0					
CSF8	.190	.235	.095	.209	.397	.304	.549	1.000				
CSF9	.126	.409	.200	.312	..481	.394	.320	.493	1.000			
CSF10	.119	.451	.335	.374	.500	.371	.517	.420	.766	1.000		
CSF11	-.039	.450	.188	.343	.475	.179	.313	.375	.706	.706	1.000	
CSF12	.100	.542	.184	.407	.434	.257	.320	.304	.755	.755	.858	1.000

Note: Kaiser Meyer-Olkin measure of sampling adequacy= .758;
Bartlett test of spericity= 531.149; Significance=0.000

Once all the essential initial tests were conducted, the rotated component matrix of the principal component matrix was developed, as can be seen in table 7.25. The factor loading value and Eigen value were set at 0.5 and 1.0, respectively (for further information refer to Dainty et al, 2003: Chan et al, 2002). The table shows that four components had Eigen values higher than 1.0; these were extracted using a factor loading of 0.5 as the cut-off point. A scree plot was also used in Figure 7.6 to confirm the four components. The four components characterize measuring scales for project managers' performance outcome within Libyan construction industries.

Table 7.26 Rotated Component Matrix

	Component 1	Component 2	Component 3	Component 4
Project managers	.909			
Mutual trust	.904			
People	.760			
Decision making	.710			
Communication		.815		
Health and Safety		.767		
work Environment		.679		
Project Quality			.813	
Client Satisfaction			.772	
Solving problem			.595	
Project Cost				.827
Project Time				.765

Extraction Method: Principal Component Analysis.

7.12 Scree Plot

A scree plot was developed using initial statistics from a principle component analysis. Figure 7.6 shows the plot provides a detailed image of the Eigen value for each component extracted. The point at which the curve begins to flatten out is the point of interest (Hassain 2008 and Cattell, 1996).

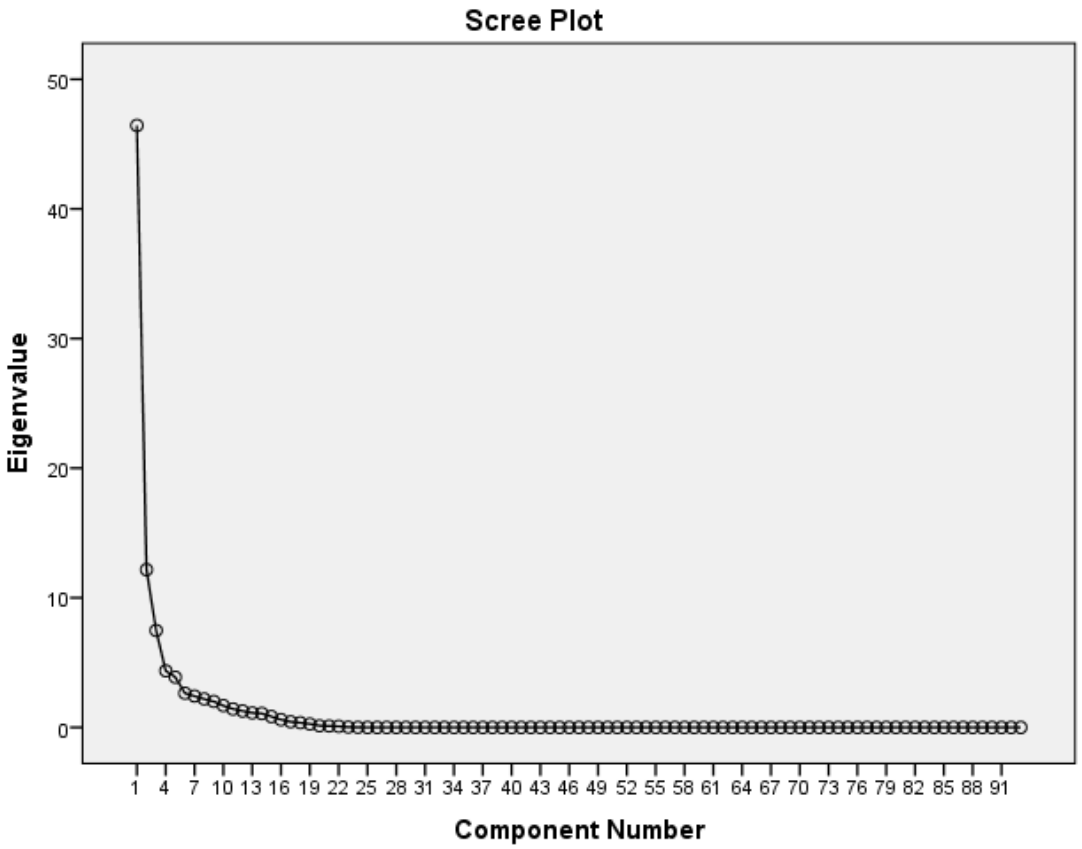

Figure 7.6 Scree Plot of Components Eigen Value Based On Principle Component Analysis

It can be seen in Figure 7.7 that the elbow' begins to appear between the fourth and the sixteen factors. This indicated a clear change in the steepness of the curve at seventeen factors.

Cattell (1979), indicated scree test method for the selection of an appropriate number of factors for extraction is generally considered to be the most appropriate method, therefore the scree plot of Eigenvalue of the component based on cattell`s scree test, an examination of Eigenvalue suggested that Is only a single dominate component where the first component explained 43 percent variation of the variables (Kline, 1998).

From the Exploratory Factor Analysis (EFA), four components comprising 91 items were extracted with Eigen values greater than 1.00, accounting for 43.721% of the total item variance.

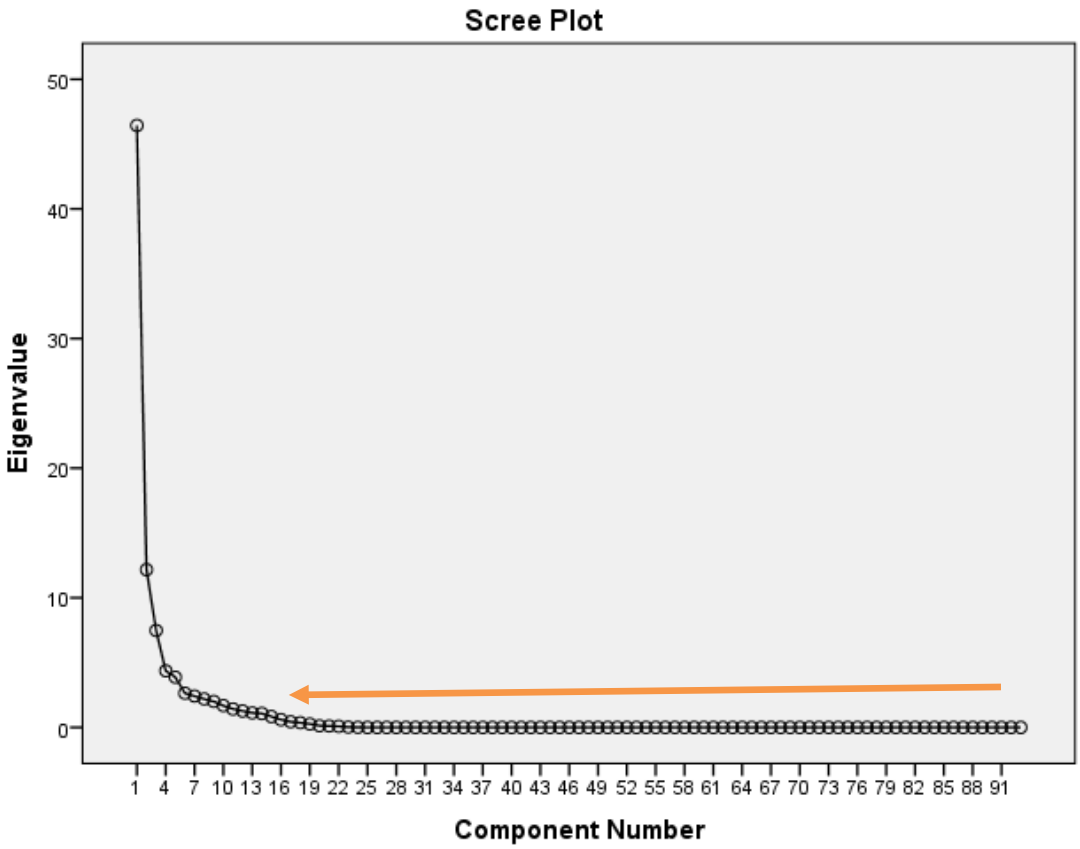

Figure 7.7 Scree Plot of Components EignValue Based On PCA

Table 7.27 presents the total variance for each component extracted, they are as follows; component One 43.721%, component two 11.197%, component three 9.586% and component four 8.308%. Therefore Principal component analysis PCA and the components extracted account for 72.812% of the total increasing variance of project manager performance outcomes in Libyan construction industries. Once all correlation between the data was analysed, each components was then identified. Component one is project manager skills, component two is work environment criteria, component three is customer satisfaction and component four is cost-time criteria.

Component	Initial Eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.558	43.721	43.721	6.558	43.721	43.721	3.737	24.910	24.910
2	1.680	11.197	54.918	1.680	11.197	54.918	3.149	20.990	45.900
3	1.438	9.586	64.505	1.438	9.586	64.505	2.166	14.438	60.338
4	1.246	8.308	72.812	1.246	8.308	72.812	1.871	12.474	72.812
5	.921	6.138	78.951						
6	.624	4.157	83.108						
7	.581	3.872	86.980						
8	.458	3.056	90.036						
9	.447	2.981	93.017						
10	.308	2.051	95.067						
11	.221	1.477	96.544						
12	.190	1.267	97.811						

Table 7.27: Component Transformation Matrix Extraction Method: Principal Component Analysis

7.13 Result and Discussion:

The result shows that ninety one variables classify into twelve variables and compress to four components, the four main components identified are outlined below with a brief description for each:

7.12.1 Component 1 Project Manager Skills: the respective factor loadings are Project managers 90.9%, Mutual trust 90.4%, People 76.0%, Decision making 71.0%. From Table 7.27, this cluster accounted for 43.7% of the variance. Another high-ranking factor in this study was the skills of the project manager. This is because they are responsible for project performance and must be able to develop fully integrated

information and control system to plan, instruct, monitor and control large amount of information (Burke, 2003). The successful of the project is responsibility of construction manager related to the main project requirements such as time, cost, quality and safety. Therefore, the role of construction project manager is the most significant factors on the economic foundation of countries due to the huge investment on construction projects (Sabet, P et.al, 2014)

.Project complexity is increasing and projects have a lot more variety and many different ways of being completed. Therefore one very important attribute a project manager should have is correct decision making in order to successfully complete the construction project. Decision-making occurs continuously throughout the project; from the beginning of the project to the very end. At the initial stages correct decisions need to be made to determine the construction activities and plan these activities and highlights the methods that will be adopted for work. Critical decisions made initially can impact work performance (Avendano Castillo et al., 2009).

7.12.2 Component 2 Work Environment: Component 2 consists of Communication 81.5% , Health and Safety 76.7%, works Environment 67.9% and accounted for 11.2% of the variance The working environment of the typical construction industry is very intensive as some areas are design offices and some are the project construction sites. Due to its intensity and the range of construction information, the management of information and communication is imperative and it has been identified as forming a competitive advantage to construction companies. Chen, Y. and Kamara, J 2008. The variables under this component share a common link with environmental issues. Ukoma and Beamish (1997) believed that living environment of a person should be well suited to their needs. A good working environment can also improve competitive edge in an environmentally conscious industry (Ngowi, 2001).

Health and safety closely ties in with environment; this is because safety standards can have environmental implications and vice versa (see for instance Kibert and Coble, 1995 cited in Xiao, 2003).

Environmental safety protection is no longer a simple complex but has become a worldwide challenging issue that all construction industries face (Xiao, 2003). Therefore, in order to combat the issue, construction developers and stakeholders should all communicate and produce appropriate structures that can help project

managers be prepared to face the challenges often encountered in the environment of construction.

7.13.3Component 3 Customer Satisfactions: Component 3 accounted for 9.6% of the variance. The respective loading factors are Quality 81.3%, Client Satisfaction 77.2%, and solving problem 59.5%. In the analysis, this component produced the highest results and proves that quality can have a significant effect on overall customer satisfaction and project success. (Torbica and Stroh, 2001). The core of construction industry relies on satisfied customers (Baker et al, 1983; Torbica and Stroh, 2001). A satisfied customer can bring about future projects and help make recommendations to current projects. Therefore managers should consider customer views as it can heavily impact their business and reputation. Many authors have highlighted the importance of customer satisfaction (e.g Karna 2004; Barret 2000; Torbica and Stroh 2001; Maloney 2002).

7.13.4 Component 4: **cost and time criteria:** The final component identified scored the lowest; with a value 8.3% of the variance., it incorporates both project cost (loading factor was 76.5%) and project duration (loading factor was 82.7%). This relationship emphasises the correlation between overall cost and overall time Odenyika and Yusuf, 1997). Many researchers have attempted to tackle the issue of shortening construction times, reducing total costs and improving project performance without having a impact on quality (Tam *et al*, 2002 Chan and Kumaraswamy; 1999).

7.14 Data analysis (Factors Ranking):

Not very important (10-29%), Not Important (30-49%), Average (50-69%), Important (70- 90%) and Very important (over 90%)

Table 7.28 Time Factors analysis

No.	Item	Not very important	Not Important	Average	Important	Very important
1	Material shortage	5%	5.5%	9.5%	24.5%	55.5%
2	Delay in materials being delivered	9.6%	14.1%		35.4%	40.9%
3	Alteration in the price of materials	5%	29.2%		30.8%	35%
4	Lack of equipment	6.5%	3.5%	2%	40%	48%
5	Material transportation	3.1%	19.5%		41.5%	39.9%
6	Site storage	8%	1.5%	3.4%	50.6%	36.5%
7	Poor or inadequate material quality	9.1%	10%		40.6%	40.3%
8	Equipment failure/ broken equipment	10.8%	38.5%		49.2%	1.5%
9	Unsuitable	1.5%	49.5%		38.5%	10.5%

	equipment used for the job					
10	Lack of skilled manpower	1.5%	11.5%		47.7%	39.2%
11	Project size	14.6%	37.7%		46.2%	14.6%
12	Project Location	18.8%	31.9%	9.3%	20%	20%
13	Modifications to the initial design	20%	24.9%	5.1%	25%	25%
14	Alterations to the scope and basis of the project	40.2%	27.5%		22.8%	9.5%
15	Lack of communication between the contractor and other parties involved in the project	4.7%	5.3%		45%	45%
16	Weak coordination from the contractor with other parties involved in the project	33%	42%		25%	25%

17	Poor and ineffective planning and organization of the project by the contractor	10%	10%	15%	35%	30%
18	Subcontractors or suppliers receiving late payment from contractors	15%	25%	11%	24%	25%
19	Contractor receiving late payment from client	15%	25%	10%	30%	20%
20	Lack of direction by the consultant engineer with other parties involved	20%	20%	5%	15%	40%
21	Order of priorities changed by the client	14.6%	1.5%		37.7%	46.2%
22	Bureaucracy in government agencies	10.8%	1.5%		49.2%	37.7%
23	Government policy changes	20%	40%		30%	10%

24	Poor contract management	25%	15%		20%	40%

The summary shown in Table 7.28 indicates that Shortage of materials emerged as the highest ranked critical criteria affecting time factors with very important 52% , whilst Shortage of equipment required was ranked second with (48%) whilst failure of equipment emerged as the lowest with (1.5%).

Table 7.29 Cost Factors Analysis

NO.	item	Not very important	Not Important	Average	Important	Very important
1.	Changes made in design	6.7%	2.3%		32.3%	58.7%
2.	Volatile weather conditions	20%	20%	10%	40%	10%
3.	Lack of organization and management at the design phase	60%	32.3%		5.4%	2.3%
4.	Alterations in owner's brief	45%	25%	5%	15%	10%
5.	Planning costs and monitoring not correctly followed during pre and post contract stages	10%	10%		20%	60%
6.	Provisional works retraced	15%	15%	10%	40%	20%

7.	Failure to report costing during construction stage	10%	20%	5%	30%	30%
8.	Scarce experience in project type	5.9%	5.6%	10.5%	22.9%	55.1%
9.	Lack of knowledge in local regulations	8.5%	30%		58.5%	2.3%
10.	Insufficient project preparation, planning and implementation	5.4%	2.3%		33.8%	58.5%
11.	Delay in construction as a result of raw materials and equipment being delivered late by contractors	8.5%	54.6%	32.8%	3.1%	10%
12.	Change in the extent of the project as a result of government policies	7.7%	47.7%		40%	4.6%
13.	Incorrect site location	9.8%	42.5%		43.8%	3.6%

14.	Weak organizational structure, failure to manage labour, ineffectiveness of technology	20%	40%	10%	20%	10%
15.	Inexperienced technical consultants and ineffective foreign collaboration agreements	35%	10.5%	10%	20.5%	24%
16.	Inability to recycle materials as a result of lack of managerial knowledge	8.8%	2.1%	/	36.35	52.1%
17.	Lack of experienced site workers	5.4%	3.2%	/	58.5%	33.3%
18.	Over time working hours	5.6%	3.4%	/	58%	33%
19.	Hiring skilled technicians to work	7.7%	4.6%		47.7%	40%
20.	Contractor's inability to adopt	3.8%	33.8%		50.8%	10.8%

	the project to its environment					
21.	Poor communication of bad results as a result of the economical political situation to stakeholders	3.8%	62.5%		31.5%	3.1%

The Table 7.29 shown and indicates that Lack of cost planning/monitoring during pre and post contract stages with Very important (60%) emerged as the highest ranked critical criteria affecting cost factors whilst Lack of experience of local regulation with (2.3%) emerged as the lowest.

Table 7.30 Quality Factors analysis

No.	**item**	Not very important	Not Important	Average	Important	Very important
1.	Coherence to specification	6.2%	4.6%		34.6%	54.6%
2.	Recruitment of high experience and qualified workers	5.3%	9.1%		30.4%	55.2%
3.	High quality of equipment and raw materials used in the project	13.1%	3.8%		50.8%	41.5%

4.	Managers involvement in decision making	8.5%	3.1%		51.5%	36.9%
5.	Implementation of quality assessment systems within the organization	35%	15%	10%	30%	10%
6.	Quality training and meetings	10.6%	30.7%	4%	2.2%	35.4%

The summary shown in Table 7.30 indicates that Availability of personals with high experience and qualification with Very important (65.2%) emerged as the highest ranked critical criteria affecting quality factors .whilst Quality assessment system in organization emerged as the lowest with(10%).

Table 7.31 Client Satisfaction Factors analysis

No.	**Item**	Not very important	Not Important	Average	Important	Very important
1.	Adequate communication between owner and project managers	8.2%	20.6%	1.5%	20%	50%
2.	Quality of the project manager leadership skills	15%	12%		30%	43%
3.	Speed and reliability of service	12%	45%	3%	15%	5%

	provided for the owner					
4.	Number of disagreements between owner and project contractors	15%	15%		30%	40%

In Table 7.31 shown indicates that Information coordination between owner and project parties with Very important (50%) emerged as the highest ranked critical criteria affecting Client Satisfaction Factors whilst number of disputes between owner and project parties with (5%) emerged as the lowest.

Table7. 32 People Factors analysis

No.	**Item**	Not very important	Not Important	Average	Important	Very important
1.	Employee's attitude towards the project	6.2%	4.6%		34.6%	54.6%
2.	Employee recruitment and capability	9.2%	3.1%		50.1%	37.7%
3.	Employee motivation	8.5%	3.1%		51.5%	36.9%
4.	Employee's work satisfaction levels	13.1%	41.5%		50.5%	3.8%

The Table 7.32 indicates that employee attitudes in project with Very important (54.6%) emerged as the highest ranked critical criteria affecting people Factors whilst belonging to work emerged as the lowest with (3.8%).

Table 7.33 Health and Safety Factors analysis

No.	**Item**	Not very important	Not Important	Average	Important	Very important
1.	Implementation of health and safety factors within the organization	6.2%	34.6%		54.6%	4.6%
2.	Location of project	5.4%	3.6%		34.6%	56.2%
3.	Number of reported accidents during project construction	8.5%	3.1%		37.7%	50.8%
4.	Project assurance rate	8.5%	4.6%		42.6%	44.6%

The summary shown in Table 7.33 indicates that easiness to reach to the site (location of project) with Very important (56.2%) emerged as the highest ranked critical criteria affecting Health and safety Factors whilst Application of Health and safety factors in organization emerged as the lowest with (4.6%).

Table 7.34 Work Environment Factor analysis

No.	Item	Not very important	Not Important	Average	Important	Very important
1.	Air quality	9.2%	5.4%		46.2%	39.2%
2.	Noise levels	4.6%	6.2%		43.1%	46.3%
3.	Waste and pollution around site location	6.9%	4.6%		46.2%	42.3%
4.	Climate conditions within the site	8.5%	4.6%		42.3%	44.6%

The summary shown in Table 7.34 indicates that noise level Very important (46.3%) with emerged as the highest ranked critical criteria affecting work Environment Factors whilst air quality emerged as the lowest with (39.2%).

Table 7.35 Communication Factors analysis

No.	Item	Not very important	Not Important	Average	Important	Very important
1.	Effective communication systems in place to contact customers	8.5%	5.4%		35.4%	50%
2.	Effective Communication systems in place to communication with suppliers/subcontractors.	6.9%	5.4%		53.1%	34.6%

3.	Effective communication systems in place between top management and employees.	3.6%	6.4%		24.5%	65.5%
4.	Changes in organization policy and reason for changes well communicated to employees	6.9%	34.6%		5.4%	53.1%
5.	Customers can easily contact the company	33.1%	7.7%		4.6%	54.6%

The summary shown in Table 7.35 indicates that effective communication systems, between top management and employees with Very important (65.5%) emerged as the highest ranked critical criteria affecting communication Factors whilst effective system of communication with suppliers/subcontractors emerged as the lowest (34.6%).

Table 7.36 Project Manager Factors analysis

No.	Item	Not very important	Not Important	Average	Important	Very important
1.	Project Manager's previous experience	8.5%	2.2%		22.3%	66.9%
2.	Competence of the Project Manager	2.5%	5.3%		32%	60.2%
3.	Project manager leadership skills	8.3%	10.7%		32.2%	48.8%
4.	Technical capability of the project manager	8.3%	12.4%		39.8%	49.5%
5.	Project Manager's authority and ability to make day-to-day decisions	10.5%	5.6%		25.9%	49%

The summary shown in Table 7.36 indicates that project managers experience with Very important (66.9%) emerged as the highest ranked critical criteria affecting project manager Factors whilst leadership skills of project manager emerged as the lowest with (48.8%).

Table 7.37 Mutual Trust Factors analysis

No.	Item	Not very important	Not Important	Average	Important	Very important
1.	Legal disagreements made between various project parties	12%	18%		30%	40%
2.	The type of construction contract produced (applies to Turnkey construction projects only)	9.15	3.1%		50.1%	37.7%
3.	Original project time frame is too short	5.2%	3.4%		34.6%	56.8%
4.	Unproductive time penalties if the project is finished late	5.4%	3.9%		34.6%	56.2%
5.	Project bidding type and the project being awarded to the lowest bidder	9%	5%		50%	35%

The summary shown in Table 7.37 indicates that Original contract duration is too short Project emerged with Very important 56.8% as the highest ranked critical criteria affecting mutual trust factors whilst type of project bidding and award (lowest bidder) project emerged as the lowest with 35%.

Table 7.38 Decision Making Factors analysis

No.	**Item**	Not very important	Not Important	Average	Important	Very important
1.	The ability of owners to make fast decisions and update the register	13.1%	3.8%		50.8%	41.5%
2.	Decisions made without considering all the implications	8.5%	3.1%		36.9%	51.5%
3.	Effective supervision and control in place by the organization	6.3%	4.6%		43.1%	46.2%
4.	Effective human resource management standards in place	4.6%	8.5%		42.6%	44.3%
5.	The decision-making process is a deliberate logical process	8.5%	4.6%		44.6%	42.3%

The Table shown 7.38 indicate that make decision without considering all off implications emerged Very important 51.5% with as the highest ranked critical criteria affecting decision Making Factors whilst the projects that managed the owners are fast at making decisions and also updating the register emerged as the lowest with 41.5%.

Table 7.39 Solving Problems Factors analysis

No.	**Item**	Not very important	Not Important	Average	Important	Very important
1.	Effective communication made between the owner and other parties involved in the implementation of the project	9.2%	5.4%	0%	46.3%	39.2%
2.	Owners offer rewards for milestones reached in the project	44.6%	9.2%	0%	5.4%	4..8%
3.	Adequate level of equipment used in the construction site	4.6%	4.6%	0%	46.9%	43.8%
4.	Effective project design that has no errors	6.9%	44.6%	0%	41.1%	4.6%

The summary shown in Table 7.39 indicates that the level of utilities used for most construction site in Libya be best described as adequate emerged Very important 43.8% with as the highest ranked critical criteria affecting Solving Problems Factors

whilst the design produced by your company for all projects very effective and devoid of errors emerged as the lowest with 4.6%.

Table 7.40 Rank of major groups affecting the performance of construction projects in Libya

NO	Field	%	Rank
1	Cost factors	60	3
2	Time factors	55.5	6
3	Quality factors	55.2	7
4	Solving Problem Factor	43.8	12
5	Client Satisfaction Factors	50	10
6	Mutual trust Factors	56.8	4
7	Project Managers	66.9	1
8	People Factors	54.6	8
9	Health and Safety Factors	56.2	5
10	Decision Making Factors	51.5	9
11	Communication Factor	65.5	2
12	work Environment Factors	46.3	11

From questionnaires analysis the table 7.40 shown the ranking of all factors that the most important factors affected to the performance of construction projects in Libya were:

Project managers emerged as highest percentage 66.9%, Communication Factor 65.5% occurred as second, Cost factors 60% begun as third, Mutual trust Factors 56.8% founded as fourth, while Health & Safety Factors 56.2% emerged as fifth, time factors 55.5% as sixth, whereas Quality factors 55.2% the seventh, however People Factors 54.6 % the eighth, Decision Making Factors 51.5 % emerged as ninth, while Client Satisfaction Factors 50% as tenth, work Environment Factors 46.3 % eleventh, Whilst solving problem factor emerged as the lowest with 43.8%.

7.14 Interview analysis:

The interview was used with the contributions gained from the questionnaires to help in building a clear picture of the construction in Libya. In addition the encouragements Received from all the interviews were an effective value to raise the morale and motivate me to do the ongoing study. Therefore, it is important to highlight the interest shown by all the people who were interviewed to see the successful results and contributions of interested parties. From the literature review and the result of questionnaires that project manager skills often make a significant contribution to the products being delivered on the project. A project manager without that technical, communication, leadership and experience Skills can't make that contribution to deliver project on time within budget.

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The interview processes has been described in chapter six. the interview letter , questions and project managers comments (Appendix 5 ,6,7), therefore, four main areas related to project managers skills to investigated the impact of a project manager's skills on the project's success or failure and what are the most important skills that affected to success project in Libya During the interview, the researcher takes notes of the aspects identified by the participants, and in return asks questions about those skills in order to gain a better understanding of the views held by the participants. These questions are generated before the interviewed take a place (structured interview with open ended questions) five project managers in construction companies has been interviewed in Tripoli Libya. By using content analysis the interviewed concluded that experience skills have also been identified by construction managers as very important aspects of delivering a successful project.

1) Technical skills of the project manager:

From the interviews, it was found that technical background of the project manager is very important and was treated as fundamental knowledge that mangers need in order to qualify for their roles. The points made below summarize the main findings:

- A person who is from a non-technical background is not able to manage engineering projects.

- Technical knowledge and expertise is critical and forms the basis of the projects managers approach.
- It is important for the project manager to be an engineer so they can relate to the project.
- Technical issues should be well understood by the project manager and decisions should be made based on their technical judgement and assessment of their situation.
- It is best for the manager to have a technical degree.
- All interviewee's agreed that managing a project is a technical thing.

From the points above two main aspects of this category were highlighted. The first being that construction managers should have basic knowledge of the different job roles and specialities involved in the project and secondly, planning and programming of the work should be done before the project starts and during the project. .Technical skills must be built over time.

One of the mangers mentioned that an engineering degree is one of the basic academic qualifications required. In my opinion the project manager must be an engineer; the engineering degree is one of the best basic academic qualifications to qualify the project manager for his role, it can help him to understanding the work in sites and inside that means give him more confident during working.

2) Experience of the project managers:

A summary of the points made at the interviews regarding project manager experience are listed below:

- In order to become a project manager, experience is imperative.
- An average of 10-13 years of experience is required in order to manage big projects such as multi-million Libyan Dinars project.
- It is important that the project manager has the correct type of experience in order to be qualified for the job
- Past validations and records help indicate what the individual is capable of
-The engineers experience on site can also be used to see how experienced they are
- They must have worked for a company for a long time in order to be hired for project management.

-The average age to become a project manager is 36; this comes with long working experience.
- Past experience is essential

Based on the comments made, it can be seen that experience is vital in order to become a project manager and very important skills can affect the managers' performance.

It normally takes about 10 years for an engineer to be given responsibility of projects. The progress of the project manager should be evaluated; this was highlighted as one of the main issues that is not done enough to test the ability of the project manager.

One of the most important experiences for the managers to have is on-the-job training. The type of experience that the engineer attains is very relevant and can impact the success of a construction project. Managers should have experience on technical issues and have professional knowledge on the programme, monitoring and the main jobs that occur around the site.

All participants noted that the experience gained from working on similar projects is necessary in order to deliver future projects successfully.

On-site experience allows the project manager to gain knowledge, make decisions, appropriately analyse the information, anticipate problems enables the identification of the appropriate systems and technologies and helps the engineer find other economic methods to execute the project.

3) Communication skills of the project manager:

A summary of the points made at the interviews regarding project manager communication are listed below:

- Effective communication can impact the project and cause it to either fail or succeed.
- Interaction between project managers and different hierarchical level employees is very important for the project.
- In order to ensure the project is on plan and making progress communication between project manager and other executives and stakeholders must be done regularly.

- The correct method of communication should also be chosen and should be appropriate.
- Project managers should spend a lot of time on communication related activities.

It is important that the construction manager is able to communicate with different people in a timely, clear manner and through different channels or means of communication with different people who have different roles within the project (e.g. team member, senior management, client, project manager, subcontractors etc). This will allow the project manager to obtain and relay messages quickly and efficiently. The goals for the project should also be communicated to the team and the individual roles should also be communicated to workers to help promote effective communication system within the team.

4) Managerial skills of the project manager:

Leadership involves the project manager guiding the construction project and leading the team and subcontractors. Whilst managing the project, the direction of the project is defined and what needs to be done to deliver the target, therefore managers should have a clear idea of what the aims and objectives and what needs to be achieved with the overall project. Leadership also includes being responsible for everything that occurs on-site and delegating tasks.

The leader should also engage the team and encourage team building; they should also identify the strength and weakness of members within the team. Clear and achievable objectives should be made for each team member and the overall progress of individuals and the team should be monitored. A leader should always lead by example and show confidence, trust and commitment to the team.

A project manager should have developed interpersonal skills and identified working relationships with different types of people; such as clients, subcontractors and the workforce and team members. They should promote communication and effective working relationships to prevent confrontation and to provide an appropriate environment for the workforce. Other interpersonal skills required for construction managers to have are; to engage and motivate employees, respect opinions and have a good judge of character in order be able to approach them well.

7.16 **Summary**

The initial analysis and results were presented in this chapter. The chapter included descriptive statistics on the overall data and factor analysis of the dependant variables was also conducted and interview analyses. The overall results suggest that participants have good experience of the construction industry and are aware of project managers' involvement in projects and they are reasonably educated and qualified; which increases the reliability of the data gathered. Exploratory analysis was also undertaken in this chapter and the results suggest that, in the view of participants, project managers have room to improve their current performance. Factor analysis was also used to establish and group the successful criteria that have the same underlying effect in order to reduce data size so that the information can be managed accurately and easily. Finally, four main components for success criteria were identified within Libyan construction industries as being work environment criteria, customer satisfaction, project manager skills and cost-time criteria.

From the interview analysis that experience skills of project manager in Libya was the most important to success projects and communication skills come later.

Next chapter will discuss balanced scorecard concepts and how the BSC improve project strategy.

Chapter Eight

APPLICATION OF BALANCED SCORECARD (BSC) IN CONSRUCTION INDUSTRY

8.1 Introduction:

After analyzed data, the result shown that project manager skills, roles and responsibility were the most important factors affecting the success of projects in Libyan construction industries, however, to help the companies solve their problems which facing them it must be look for proper method that can help the company and the manager in same time. There are many methods used such as total quality management (TQM), key performance indicator (KPI), Six sigma and balanced scorecard (BSC).

To improve the company's strategy the researcher found the original Balanced Scorecard is the proper method can be used in this study and offers a unique piece of work by Evaluation the performance of project managers that affecting Libyan construction industry. BSC is strategy tool can measures long term factors financial and non-financial, also Highlights the company's strategy and increases consensus amongst managers.

(R. S. Kaplan and D. P. Norton in 1992) developed the Balanced scorecard (BSC) concept, shortly after; this concept was adopted by thousands of organizations worldwide. Tools developed in the past tended to emphasis on one singular value that the organization had to focus on, whilst BSC proposes to balance certain important factors for various stakeholders in order to improve corporate value.

Within the construction industry the balanced scorecard can be used to impact the economic circumstances of industries by defining the construction companies' strategy management process. As a result, the principle factors of long-term growth can be identified and the balanced scorecard concept can be implemented as an effective strategic management tool.

Past studies investigating management direction have adopted an intellectual capital approach; which has a significant effect on the performance of the company and is often thought to be a warning device for financial performance (Cabrita, 2006). Kaplan and Norton (1996) argued against this idea and believed that companies should focus more on developing their technology into material assets quickly through intelligent management of intangible assets and liabilities. The purpose of intellectual capital performance as a critical component for an organization was defined by Allee (2000), and as a result caused continuous success by integrating financial models into responsible locations.

(Basu, 2001) Claims that the Factors for long term growth are always required and businesses are constantly looking for new ways to update their procedures and develop their performance by creating metrics to evaluate project performance. Therefore, the creation of the balanced scorecard was considered to be the ultimate performance measurement tool as not only can it contain financial measures and use them to analyze project improvement by taking the appropriate action and implement existing measures, but also focus on customer satisfaction within operation measures, internal processes and companies leading growth activities. This concept can help managers conduct performance appraisals for the business and it provides driven pathways for this to occur. Kaplan and Norton (1994).

A traditional tool commonly used as a financial indicator was known as a lagging indicator. Three other indicators were added and these are known as leading indicators (e.g. operational measures) Kaplan and Norton (1992). These leading indicators provide a steady perception into finance besides intellectual capital. However, if one of these indicators are neglected, the full results for business performance could not be captured Amaratunga, *et al* (2000).

8.2 Balanced scorecard Perspectives:

This chapter will explain the main function of the balanced scorecard concept by explaining each BSC perspective. The main purpose of the balanced scorecard strategy is to interpret the organization's vision by developing a number of objectives and measures that are based around four main perspectives. These perspectives are illustrated in figure(8.1) below.

Figure 8.1: The Balanced scorecard Perspectives (Kaplan & Norton, 1994)

8.2.1 Financial perspective:

Generally, financial performance measures can be regarded as the most important component in applying company strategy; this is due to main role of supporting and improving companies. The main financial perspective goal is to increase shareholders value, growth and profitability (Kaplan and Norton (1992). Long-term financial growth can be attained by using the BSC to set objectives that measure financial performance combined with a series of activities that can be used to engage with employees, systems, financial processes, internal process and the customer.

Financial objectives, measures and critical goals assist in evaluating the financial performance predicted by using BSC. Table (8.1) below outlines the main measure, factors and objectives to consider as a financial perspective (Kaplan and Norton (2000b).

Table 8. 1: The Financial Perspective's Measures and Objectives

Factors	Measures	Objectives
Contribution margin (%)	Profitability	Survive
Cash flow	Revenue	Prosper
Solvency (%)	Productivity improvement	Profitability
Return on investment (%)	Market value	Lowest cost
Total costs	Economic value added	Profitable Growth
Total assets / employee	Reduction in risk	Enhance emergency preparedness
Revenues / employee	Profit/total assets	Improve communication
Profits / employee	Enhancement of assets	Improve collaboration
Market value	Cost reduction	Logistical Support
Return on net assets	Reliability of performance	
Return on total assets (%)	Profit margin	

However, Schneiderman (2001) believes that if businesses wish to gain optimum advantage from BSC then non-financial factors should also be considered. If businesses only focus on accomplishing short term financial outcomes, it could lead to the organization only developing short term targets and ignoring the long term value and investment and neglect the importance of intellectual and intangible assets which have a main role in developing the organization (Kaplan & Norton, 1996b).

8.2.2 Customer Perspective:

In more recent years, the majority of organization has developed their vision based on their customer; as customer focus and satisfaction is regarded very important for any sector. The main aims of an organization based on a customer perspective is to provide excellent services, quality and to ensure customers are satisfied so that the business can maintain a good reputation amongst their customers (Amaratunga, et al., 2000).There are many factors, measures and objectives that have to be followed by organizations in order to be established as the best business amid both present and

potential customers. These factors, measures and objectives are presented in table 8.2 below (Kaplan & Norton, 1993):

Table 8. 2: Customer Perspective Measures, Objectives and Factors

Factors	Measures	Objectives
Brand-image index (%)	Short lead time	Delight the target consumer
Average customer size	Repeated business	Customer relationship.
Customer rating (%)	Customers' retention	Customer satisfaction
Service expense / customer.	Customers' profitability	The money value
Number of customers	Annul income/customer	Competitive price
Market share (%)	Average customer duration	High-performance professional image
Customer lost	New Customer acquisition	Innovation
Satisfied-customer index (%)	Customer loyalty	Reputation
Customer-loyalty index (%)		

Another important factor that all business must consider is to ensure all products are delivered on time and the market circumstance is classified in order to measure the account share in directed sectors (Kaplan & Norton, 1996b).

8.2.3 Internal process perspective:

Internal factors can be used to categorize the customers and organization objectives. Measuring the company's process in order to reach the best performance outcome does this. By implementing the internal process perspective, customer and financial strategic targets can be attained (Kaplan & Norton, 1996a). Organizational processes can be observed through the use of BSC and it can ensure that results will be sufficient. There are main two differences between the traditional approach and the BSC style of measuring performance management; the two main differences are as follows:

- The main method used in traditional approaches was to observe and develop existing processes, whereas the BSC approach generates new processes that allow the organisation to surpass in meeting financial and customer objectives.
- In order to achieve new services and products the BSC also integrates innovation processes to increase the outcome (Amaratunga, et al., 2000).

In terms of internal processes, there are some factors, measures and objectives that have to be contemplated; as shown in table 8.3 below (Kaplan & Norton, (1996b) Kaplan & Norton, (2000a).

Table 8. 3: The Internal Business Perspective Factors, Measures and Objectives

Factors	Measures	Objectives
Industrial accident	Value of rework	Risk management
Cost of administrative error (%)	Commitment to budget	Tender effectiveness
Administrative expense	Productivity & cost reduction	Providing responsive service
Contracts filed without error	Non-conformance to standards	Increase customer value
Time for decision making	Defect rates	Creating innovation products
Processing time	Cost & time predictability	Shaping customer requires
On-time delivery (%)	Environment incidents	Understand customer needs
Average lead time	Corporate quality performance	Supply chain management
Inventory turnover	Investment in technology	Joint ventures & partnerships
Improvement in productivity (%)	Research and development	Good corporate citizenship
IT capacity / employee	IT expenses/employee	Safety (loss control)
Emissions from production	Ethical incidents	Quality service
Environmental impact	Safety incidents	

8.2.4 Learning and growth perspective:

Whilst some consider this last factor as not as important as the other three; learning and growth perspective is the foundation that companies have to produce in order to determine long-term enhancement and growth. This is the last factor but ultimate factor that must be used in order to support the company's vision and enhance potential value for owners. This factor not only encompasses employee skills, framework and structure but also the efficiency of data and activities that support the achievement of company's aims. Learning and growth factors constitute the basis for achievement of any learning associations (both present and future learning ventures).

According to Kaplan & Norton in (1996b and 2001a), learning and growth factors can be split into two main sections:

- **Employee objectives:** employee competencies can be improved by the use of training programmes, employee enhancement and reskilling personnel. Also, productivity and retention, personal satisfaction is also achieved which provides a suitable environment for activities.
- **Processes and system objectives:** This aspect focuses on advancing the organisations' practical infrastructure, so continuous learning can be achieved and information administration capabilities will be improved e.g. communication skills, data structure and databases.

Findings from Kim & Mauborgne's study (1997) led them to reiterate the importance of innovation and emphasized that neglect and bad communication can lead to the loss of consumers. The study also highlighted that if a business wishes to comply with the growth and learning factors, there are a number of measures actions that must be put in place, such as; finding time to adopt a new approach, invest capital into learning and innovation, leadership research, effective and quality partnerships, listening and taking on board personal ideas, personnel satisfaction, flexibility ratings, securing trust on all levels, availability to existing information and strategic data, ensuring the groundwork for accessible learning is created and representative strengthening indexes. Kim & Mauborgne (1997) (Kaplan & Norton, 2000a and 1996b).

8.3 Using the Balanced scorecard as Strategic Management:

Most organizations tend to focus on the financial aims and measures and neglect the long term planned objectives. As a result of paying less attention to the long term goals, there is a lack of development and strategy implementation Kaplan & Norton,(1996a) The implementation of BSC can also be used to help organizations concentrate on their long-term objectives. This can be done through four main process, these are illustrated below in (figure 8.2).

Figure 8.2: Managing Strategy by the Four Processes (Kaplan & Norton.1996a)

8.3.1 Translating the vision:

Most companies put together a specific mission statement for all strategies; this mission statement should also describe how the strategy can change if needs be. The main purpose of the mission statement is to emphasize the organizations values and objectives so high personnel services can be used to achieve customer requirements Kaplan & Norton,(1996a). The first process of managing the strategy is translating the vision; which means the mission statement should be explained coherently to all employees and managers so that the goals of the company can be put into action and

so employees are aware of their roles and responsibilities in achieving the organizations vision Kaplan & Norton (1993).

If all the processes shown above are satisfied then the business strategy can excel and provide an excellent service to the consumer. Kaplan & Norton (1996a) outlined 5 main factors that are required in order to provide excellent service to the consumer, depending on the type of consumer. The five factors are shown in Figure 8.3 below:

Figure 8. 1 The Definitions of Translating the Vision to Superior Service
Kaplan & Norton (1996a)

8.3.2 Communicating and linking:

The second stage to developing business strategies is known as communication and linking; this stage encourages effective communication through all stages of the business. Each department's individual goals should be modified to ensure all departments goals link; this can be done by using assessment methodology and other incentives Kaplan & Norton (2000a). To ensure each department objectives link with others, the balanced scorecard concept is used to highlight three main factors; communication and education, setting objectives and connecting incentives and

execution measures together to make the overall management system connected Kaplan & Norton (1996a).

Communication and educating the workplace ensures that all employees are aware of the aims and strategies of the company at all times. Another imperative aspect to this process is that lower level employees must be confident and comfortable enough to be able to voice their opinions on whether the aims are practical to attain from an operational point of view to their managers.

Simply, choosing appropriate objectives is not enough to ensure employees are working to achieve those objectives; a method needs to be used to guarantee that the objectives are linked to the target by applying the personal scorecard. This method should be used to produce a card which explains the company's aims, targets, measures and objectives so that they can all be interpreted into actions that will help achieve the goals.

By offering rewards and incentives linked to employee performance, the employee is further motivated to satisfy the organizations business goals. For this factor, the BSC concept is seen more as a holistic vision as the traditional method depends on financial performance only (Organisation, 2001). BCS can be used to ensure all standards have been completed before incentives are given to employees. The concept is that if certain standards have not been completed then the employee risks not being able to receive an incentive Kaplan & Norton (1996a).

8.3.3 Business planning:

As mentioned previously the sole purpose of BSC is to combine strategic budgeting and planning processes in order to ensure the budget allocated can be used to enhance the business strategy. The BSC outlines 4 fundamental measures that can increase revenue, achieve fixed goals and define the best resources to use to help achieve these goals. Kaplan & Norton (1994). Kaplan & Norton (1992).

Figure 8. 2 Business Planning in Linking Measurement to Strategy
(Kaplan & Norton 2000a)

Figure 8.4 above shows a concept developed by Kaplan & Norton in 1993 that defines how organizational strategy and BSC measurement can be connected through good business planning to develop a strategic model.

Targets must be set and met in order to expand on the traditional processes for planning and budgeting to combine with the financial and strategic goals. Using the traditional approach, managers often only focused on the short-term outcomes, but now using the four perspectives and targets can help managers' asses the implementation of the strategy and the theory underlying the strategy Kaplan & Norton (1996a). Managers should also have organized the different strategic initiatives and chose the most important resources that will support these initiatives.

8.3.4 Feedback and learning:

The final process for BSC is feedback and learning. This stage helps managers monitor the progress of the organization through feedback and results. It gives managers a chance to review individual employee performance and department performance to see whether planning and financial targets have been met. This

process also identifies how well the organization has implemented a strategic learning approach.

Figure 8.3 Feedback Performance Management Process
(Kagioglou, et al., 2001)

When reviewing business performance and how well previous processes were implemented, any deviation from the strategy is described as a fault. The three main processes for the BSC management system provides both short-term and long-term results; the last process (feedback and learning) can help modify strategies according to results. Feedback and learning is considered as the optimal element that helps evaluate how well strategic learning was implemented Kaplan & Norton (2000a).

8.4 Balanced Scored card and Strategy Maps:

Norton and Kaplan stated, *"The measurement system should focus on the entity's strategy – how it expects to create future, sustainable value. …Without a comprehensive description of strategy, executives cannot easily communicate the strategy among themselves or to their employees. Without a shared understanding of the strategy, executives cannot create alignment around it. And, without alignment, executives cannot implement their new strategies."*

8.4.1 Setting up a Strategy Map:

The implementation of the BSC strategy allows companies to plan their strategies efficiently based on the BSC perspectives. One of the main benefits of planning and

establishing business strategies is that the company's aims to transform their assets into outcomes are demonstrated effectively Kaplan & Norton (2000a). By transforming intangible assets into tangible outcomes, the business strategy can be well understood and recognized by employees. Strategy maps are very useful to a business as they illustrate how employees' responsibilities and roles are involved in achieving the organizations objectives. They also provide a cooperative work atmosphere which can help employees exceed the company's projected targets Kaplan & Norton (2000b).

The strategy map also helps guide the company into future positions and roles, it also outlines specific hypotheses for the company and establishes how companies can find these hypotheses. An example of a strategy map is shown in figure 8.6.

Figure 8. 4 An Example of a Strategy Map (mapping of causes and consequences) (Norton & Kaplan, 1996)

8.4.2 Implementing the Balanced Scored card BSC on the Construction Industry:

The current growth in the use of performance measures illustrates the demand companies have for expanding their knowledge and information, more so than the time, cost and quality triangle (Walker & Johannes, 2001). However, the construction sector has yet to understand how more shareholders can impact the organizations performance. However, they have realized how the use of balanced scorecard strategies and triple bottom lines are gaining in popularity due to more companies in the service and management sector adopting their approach.

Therefore, within the construction industry, the effectiveness of adopting a BSC approach has improved company performance as it has taken into account the critical managerial requirements and ensured all activities are completed. The construction industry urgently requires a tool to measure project performance and help enhance the sector, as this would revolutionize construction management and increase performance by adding monetary value to procurement procedures. It would also help review other methods and tools used and project performance can be evaluated more efficiently and effectively.

It was recommended by Chan & Hiap (2012) that the BSC concept should be used by the construction industry. The reason for this is because BSC develops performance management and offers stakeholders a chance to see all objectives and long-term plans of the company in order to meet the strategy objectives. Chan &Hian (2012) also stated that the BSC approach can be used to assess critical achievement factors, make recommendations to modify the strategy in order to exceed the vision of the company and out-perform all other competitors.

8.5 Summary.

This chapter had an explanation of the Balanced scorecard concept, include a discussion of the interrelationship between the four perspectives, Financial perspective, Customer perspective, Internal process perspective, Learning and growth perspective. in addition how using the Balanced scorecard as Strategic Management, strategy maps ,and how can allows companies to plan their strategies efficiently based on the BSC perspectives and Implementing the BSC on the construction industry, in next chapter to improve the performance management in Libya by develop a guideline to implement the Balanced scorecard approach in Libyan industries.

Chapter Nine

GUIDELINES FOR IMPLEMENTING BALANCED SCORECARD APPROACH INTO LIBYAN CONSTRCUTION INDUSTRY

9.1 Introduction:

The balanced scorecard strategy was introduced in chapter three and eight. The functions of the strategy were explained using factors, measures and objectives to describe the four BSC perspectives; Financial, Customer, Internal Process and Learning & Growth. This chapter also described how BSC can be implemented as a strategic management tool by using four factors; translating the vision, communication and linking the goals of the organization, business planning and linking this to the strategy, feedback and learning.

Strategy maps were also described in this chapter and how BSC can develop a strategy map; an example of a strategy map was also provided. The effectiveness and appropriateness of using BSC in the construction industry was also touched upon.

The balanced scorecard can be used to develop a strategic management system as it is an innovative system that can be used to transform a vision into a policy that is understood and communicated by all employees.. The BCS also plays a role in combining employees' performance, objectives and giving rewards to employees if all aims have been met.

Consequently, the business approach should be effective enough to achieve all planned goals and support the communication of employees with top management. Annual and monthly strategy reviews are held to discuss the progress of the strategy and make recommendations on how the approach can be changed and what needs to be improved; measures can also be put in place for budget and long-term business development.

9.2 Why Choose the BSC in Libya?

BSC can be defined as an action management oriented instrument that balances the financial and non-financial with the tangible and intangible assets. It finds a way to make the intangible assets important in determining organization success. Due to numbers of problems that the Libyan construction industries especially in Tripoli are trying to solve such as poor communication between stakeholders, lack of skilled employees health and safety, poor quality and time overrun, in this chapter produced guideline to implement BSC in construction in Libya to improve and overcome of all the problems that the industry faced. There for the main reasons of selected
Guideline the BSC the construction industry were outlined below:

- The BSC provides a robust method as it focuses on specific organizational strategies.
- The BSC ties together the strategic plans, budget and incentives in order to ensure resources are correctly chosen.
- It is very useful for public organizations as it aims to improve profitability and accountability within management.
- The performance measures within the BSC are connected to operational targets.
- BSC is developed using the organizations visions and strategies and it supports measurement and management processes.
- By implementing the scorecard, teamwork and consensus can be reached throughout all levels of the organization. BSC helps develop the business strategy by combining outcome with indicators ad balancing the financial and non-financial operating measures Watts & McNair (2006).

9.3 Impact of the Balanced scorecard :

Existing literature has focused on many of the traditional measurement strategies flaws and many have attempted to enhance and develop these flaws through the use of alternative measurement tools; such as the balanced scorecard and performance prism.

A lot of effort has been made to research the design and development of alternative measurement systems, but there are only a few researches that assess the impact of BSC. The main advantages BSC can have are listed below:

- By comparison, the performance of organizations that have implemented the BSC framework and performance measurement system is significantly higher than organizations that have not implemented the BSC tool.
- Organizations are able to use financial and non-financial measures more extensively and are able to link strategic measures to operational measures in order to produce higher stock market returns.
- BSC reduces the overhead costs and increases sales and profits
- It also improves and expands the decision-making performance of managers and employees.
- Employee satisfaction is much higher.
- Enhances the implementation and acceptance of business strategy.
- Develops employee understanding of the business.
- The goals and objectives of an organization are made more clear and everyone is made accountable for achieving the goals and objectives.

The progress of the business can be monitored and it allows the organizations to adjust and make improvements when required. (MacLellan, 2007).

9.4 Guidelines of BSC within Construction Industry:

The main ways the BSC can be developed are highlighted below:

- Development of the organizational perspectives.
- Development of strategy maps and key successful factors (KSFs).
- Development of key performances indicators (KPIs).
- Target development.
- Initiative development.

In addition to the factors mentioned above, other important steps and information are required in order to effectively implement and design the BSC strategy within any organization.

An internal assessment of the organization is required in order to assess the need of the BSC and to develop where to start developing the BSC within the organisation. Once this has been established, leadership support must be gained, a BSC team must be formed as well as a training program and a communication plan must be developed (Niven, 2003).

9.4.1 Planning Phase:

Before designing the BSC can begin, an internal assessment of the BSC must be conducted and an appropriate develop strategy must be planned; both corporate and business units levels must be defined. Niven (2003).

9.4.2 Design and Implementation Phase:

Once the internal assessment shows a need for BSC application, and the correct business unit is selected, BSC can then be designed taking into account the BSC perspectives, the construction company's strategy map, the key performance indicators, company targets and initiatives Niven (2003) The section below will explain each factor in turn:

9.4.3 Perspectives:

The chosen viewpoint of BSC should be built upon what is required for the company. As construction companies are public organizations who provide a utility service, the scorecard perspectives can be; customer perspective, internal process outlook, learning and growth perspective and the financial aspect (e.g. budget and resources).

9.4.4 Strategy Map and Key Success Factors (KSFs):

A strategy map can be described as a one-page document that clearly articulates, and graphically represents the key objectives of the scorecard perspectives. The strategy map outlines the performance objectives and this acts as a guide to correctly execute the strategy.

For example, the performance objectives or the KSFs for the customer service aspect of a construction industry can be established by managing a workshop for the BSC team to review and undergo a SWOT analysis (strength, weakness, opportunities and threats) for each BSC perspective.

Each objective outlined in strategy map must be effective and follow some sort of logic to ensure the main vision of the company will be attained.

9.4.5 Key Performance Indicators (KPIs):

Key performance indicators should then be formulated for each perspective. KPI's evaluate the actual performance against the expected results. In order to accurately

select the KPI's, each indicator was reviewed by the BSC team and examined in regards to the pre-defined set criteria; which included its relevance for strategy, its ability to understand, ability to be accessible and the existence of link in a chain of cause and effect. Once each indicator was analysed it relevance was scored out of 10. If the total score was less than 75% it was deemed to be an unsuitable indicator and was rejected.

A data dictionary was created to ensure all users can access the KPI's as a reference; it provided users with a detailed analysis of each BSC measure and ensured everyone could understand the measures. The data dictionary allowed a standardized and structured description for all KPIs in accordance to pre-defined parameters; such as owner, formula, data source, baseline, target value and other relating initiatives.

9.4.6 Targets:

The desired result of a performance measure is known as a target. Targets act as a reference point to help guide the actions, decisions and resource allocations. Targets can be used as a communication tool to inform the entire organization of the performance required in order to achieve success.

The following factors must be considered when developing targets: acknowledge and review past data, involve all employees in the process of setting targets, share information, learn from the BSC team, ask for feedback from customers and stakeholders.

Before any targets are set, a clear picture of the current performance measure should be developed for each perspective. This study collected performance measures from annual reports, the strategy map, customer surveys and discussions with the teams involved in change management projects.

9.4.7 Initiatives:

Initiatives are the specific programs, activities, projects or actions engaged to help ensure performance targets are met or exceeded are known as initiatives. Successful initiatives all demonstrate a clear link to objectives.

9.5 Main Advantages of BSC within Libyan Construction Company (LCC):

The implementation Approach of BSC into Libyan companies has many advantages. The main advantages are briefly described below

- Highlights the company's strategy and increases consensus amongst managers.
- Defines the directions, objectives and differences between the new and old strategy to shareholders through education and effective communication to the company.
- Offers managers the chance to observe the organisation from four essential points of view and allows them to focus on what actions to take to meet the objectives in the allocated budget.
- Allows managers to make rapid decisions by providing managers with measures that are most important for the business, it keeps all information concise to avoid overload of information.
- Put emphasis on combining personal and departmental goals.
- Supports alignment and recognition of strategic initiatives.
- Outlines the managerial roles in companies, such as; human resource management, controlling and planning of organisation actions, managing the organisation's resources and their distribution etc.
- Improves the organisation's performance through strategic feedback by evaluating the processes and assessing performance measurement techniques, defining the right measures that need to be monitored, establishing the groundwork to lead to the growth of the company and indicating performance orientation.
- Ensures long-term performance of the company is improved by tracking the intellectual capital and intangible performance for the organisation.
- Guarantees organisation outcome by building a respectable reputation amongst personnel, stockholders and customers.

Even though, BSC has many advantages, there are also some disadvantages. Many authors have criticized it for being too over-simplistic and not containing a rigid measuring classification (Kagioglou, et al., 2001). Letza (1996) explained some critical mistakes made by organizations when designing and implementing BSC, they are as follows:

- Lack of knowledge on what to measure; this occurs when managers miss connections between the organisation's strategic goals and measures.
- Not measuring strategic actions; this occurs when managers believe that certain things cannot be measured or the activities are conducted in a professional way.
- Dispute between managers on what needs to be measured. Disputes can also occur if certain departments under-performed.

* Adapted from Martinsons, Davison & Tse, Fig 1 p. 74. Original source Kaplan & Norton.

Figure 9.1 Relations in BSC (Kaplan&Norton)

One flaw of the balanced scorecard concept is that it ignores the fact that critical parties can impact the success and performance of the company. For example, BSC makes no mention of employees, suppliers, pressure groups, alliance partners, local communities and regulators (Neely, et al., 2001).

Gautreau and Kleiner (2001), state that problems may occur in using BSC when organizations attempt to automate the system. As the BSC defines strategies, there could be many different performance measures in place; which could make quantifying the measures and relating the measures to specific items difficult. The

application of successful performance measures is very complex and difficult because it takes a large amount of time and required a great amount of resources in order to update the scorecard.

An advantage of using the balanced scorecard concept in Libya is that it generates an image of how performance enhancement choices that are in line with corporate targets can be developed. Therefore, with this concept in mind, the balanced scorecard can defined as being an integral scorecard strategy that is connected with the company's future vision, daily process and desired operative behavior.

Kaplan & Norton (1992) believe that BSC limits should be tested so it can be seen how far BSC can be used to accomplish business objectives in construction. There are many types of performance-based assessment structures that the balanced scorecard technique can be implemented in, such as; supervision, work environment, progress, internal work and quality.

9.6 Recommendations for the Post-Implementation Phase.

To achieve the high benefits from the implementation of Balanced scorecard in the organisations there are some recommendations help the performance management process:

- The BSC effective tool must be updated by review and changes the goal of perspectives, at any new business conditions.
- It is a long-term solution, requires a lot of roles and work to keep going and achieve the objectives.
- The results of the implemented BSC system it depend on reporting system process.
- All level of the organisation should understand the concept of Balanced scorecard to avoid mistakes.
- Internal and external data must be provided to help measure and define the goals.

9.7 Validation of guidelines of BSC within construction Industry in Libya:

From the literature review, data collection and analysis there are many problems faced Libyan construction industries such as poor communication, lack of skilled employees, poor quality, the guideline is coming from the outcomes of the observation, literature review, data collection and data analysis (questionnaires survey and face to face structure interview). The Implementation of developed BSC

guideline in Libya “Tripoli” construction companies to improve and overcome of some problems that the industry faced. The validity is important because it reflects the potential objectivity and reliability of the implementing the guideline of balanced scorecard in Libya construction industries. There are two ways to validate the guidelines as the researcher got good contact within Libyan construction companies managers during the observation, questionnaires survey and interview so good contact with the participated. The researcher send by email the guidelines documents to the managers in Libya” Tripoli how to implement BSC in construction sector to improve their performance, profitability and accountability within management in addition to help develop the business strategy. to test and validate the implementing guidelines of BSC take long time (long term from 3 to 5 years) to get the result, the other way to validate the guidelines by publishing papers and see the comments and feedback from the reviewers in the meantime the researcher starting writing papers under the name guidelines 0f implementing BSC in LCI.

9.8 Summary:

Finally, the advantages of BSC were explained and the common mistakes made when implemented BSC was described and how the strategy can be modified to become more efficient.

An advantage of using the balanced scorecard concept in Libya is that it generates an image of how performance enhancement choices that are in line with corporate targets can be developed. Therefore, with this concept in mind, the balanced scorecard can defined as being an integral scorecard strategy that is connected with the company’s future vision, daily process and desired operative behavior.

Believe that BSC limits should be tested so it can be seen how far BSC can be used to accomplish business objectives in construction. There are many types of performance-based assessment structures that the balanced scorecard technique can be implemented in, such as; supervision, work environment, progress, internal work and quality.

Chapter Ten

CONCLUSION, RECOMMENDATION & FUTURE STUDY

10.1 Introduction:

The main aim of this chapter is to discuss conclusions based on the results obtained from data analysis, discuss the key finding, developed recommendation, research limitations, and future scope of the research. .

10.2 Conclusion:

The main aim of the study is to explore and identify the main factors that affect project manager performance within Libyan construction industries. The study will also investigate how these factors impact the success of construction projects.

The recommendations made below were achieved by satisfying these objectives, the objectives were met mainly through the literature review and scholar reports.

The literature review conducted in chapter two, outlined the main vision of the Libyan construction industry and the visions of each sector within the industry, emphasized the main difficulties facing the Libyan Construction Industry (LCI), the importance of the construction industry in Libya on the economic status of the country and Project managers are very important for the construction industry.

the research successfully determined the performance management and its importance ,performance measurement techniques and tools to improve performance management also explained the performance indicators Furthermore explained the concept of the balanced scorecard strategy as one of the important indicator which latter implemented as a strategic management tool in Libya construction industries.

This study also successfully looked at the factors affecting success construction project. Project success is often evaluated by many different groups of people; such as stakeholders, managers, clients, employees etc. Typically, the performance of the project manager heavily depends on the project processes.

The literature review influence continuous performance management within LCI to identify the main factors that affect the performance of project managers within the

construction industry in Libya and to explore how these factors contributes to success of construction projects.

This research had in depth review of the various main roles, characteristics and responsibilities of project managers were identified as follows; successful initiation, planning, design, execution, monitoring, controlling and execution of a project. The review also found that the project manager must be able to ask probing questions, be a good decision maker, notice unspecified assumptions and mistakes settle conflicts.

The literature review discussed the performance management process and successfully evaluated the factors affecting project managers' performance within the Libyan construction industry. Balanced scorecard (BSC) concept implemented and the role of the four perspectives identified as a strategic management approach to improve project performance in Libyan construction industries. Also looked into the leading and growth perspective as being the basis and foundation for companies to use, to establish long-term development and growth.

10.3 Key Findings:

The study's findings were mainly based on the results and analysis of the questionnaire and interviews. The responses received from the questionnaire it can be seen that experienced project managers who answered the questionnaires, have ample knowledge on the organizations implemented strategy and developed specific skills within the Libyan construction industry.

The main challenges that face the Libyan construction industry were demonstrated from different perspectives.

According to chapter eight and nine, the findings of the research have to be centralised of producing the balanced scorecard role:

1. BSC can be used to evaluate the overall business and produce ways in obtaining the company vision. However, it is important that the implementation of the balanced scorecard strategy is evaluated to see the weakness and strength of the business and how well the four perspectives were applied. This study found that BSC ultimate performance measurement tool and new strategy, its measures financial and non-financial aspects of the business and analyze these factors to help improve existing measures and

focus on operational measures such as; customer satisfaction, internal processes and companies leading growth activities.

2. Application of the new strategy will encourage the growth and progression of the construction industry in Libya. BSC will help transform the vision, increase communication and linking, develop business plans and will also boost feedback and learning.

3. However, the BCS strategy does have some disadvantages if it is not implemented effectively. The data analysis findings developed some recommendations on how the balanced scorecard strategy should be applied within the Libyan construction industry.
4. Another key finding is that the current organization strategy within the Libyan construction industry needs to be evaluated to see how effectively it is transforming the vision into actions that are understood and communicated by all employees. Evaluating the current strategy will also highlight any issues and gives the new strategy a chance to address these issues by modifying certain areas and establishing measures for budget and long-term plans.

5. improved the strategic outlook between managers , by this means the ability to solve management problems

10.4 Recommendation:

The research method used in this thesis was qualitative and quantitative. Therefore to further enhance the research method, the construction industry in Libya faced many challenges with lack of experienced project managers, time and cost overruns and a cause for concern. Many construction projects are not completed on time or within budget. Reasons for this may be unrealistic times and budget set at the initiation phase of project implementation. The following recommendations can be made based on the study's findings:

- In order to enhance the managerial skills on construction professionals training courses should be offered.

- Libyan Universities should teach construction project management as a degree in Libya so that individuals can be aware of the skills and roles of construction project managers. In Libya they only teach project management as module which is not enough to be project manager.
- Technical institutions should be set up by the government in order to encourage unemployed youth to develop skills and train them to work for construction companies that will give them more experience , more confident and give them chance work placement.
- Funding should be provided by project owners in order for the project to occur more efficiently and avoid any unnecessary time overruns; which can also affect project cost. Project owners should be engaged all the way throughout the starting project from planning stage all the way to completion.
- There should be time allocated for preparing feasibility studies such as planning, designing, documenting information and submitting tenders; to avoid the changes in timing and plans and can be minimized throughout the course of the project.
- As result to poor communication in Libyan construction industries, it is imperative to constant effective communication between the project managers, project workers and participants during all the stages of the project.
- The project plans should be planned clearly and scheduled as accurately as possible in order for operations to run more effectively and efficiently and the project objectives can be achieved faster.
- Performance should be enhanced and work hard to solve any problems faced the project during the process efficiently. In order to discuss issues relating to the project regular meetings should be arranged.
- In order to meet contractor requirements, it is the project managers' duty to ensure subcontractors are adequately experienced and all work is planned. By checking subcontractor's credibility, it can be ensured that all subcontractors have adequate experience, expertise and ability to deliver the work within the estimated time.
- The budget and cost of the project should be used to validate the time of activities so that no unnecessary costs are made. This will also avoid disputes between the client and project manager in regards to the completion time. If

the completion time is very short, then the scope of the project should be reduced and the size of the team should be increased.

- Face to face interviews should be performance and afterwards there should be an opportunity to ask follows up questions for any questions where answers were confusing and not understood to make sure everything clear to keep away from faults and problems that influential the Progress of the project. This also gives the participant an opportunity to elaborate on their answers and this strengthens the quality of the participant's response.
- Research gathered should be compared to findings from local companies as well as international companies through literature reviews; as this will help give the research a broader view.

10.5 Research limitation:

There are many limitations to this study that this section will briefly discuss. Whilst the questionnaire and results generated a lot of great results, there were a few limitations, there are as follows:

- This research was done within the Tripoli area in Libya; it only applies to construction organizations in Tripoli .in future the research should cover all area of Libya.
- The scope of this research topic generated a long, time-consuming questionnaire.to reducing that
- Respondents misinterpreted some questions and this caused confusion and made it hard for respondents to answer the questions. The pilot questions used to avoid Misunderstandings.
- The time specified for interviews was too short.in future study pilot interview can help collecting more data.
- Due to limited resources and research material on the construction industry in Libya, it took a long time to find appropriate information in regards to the topic.
- Most of the roads, streets and building in Tripoli were not named or numbered, as a result, the Communication with companies are not easy.

10.6 Contribution to knowledge:

This research provides a contribution to this study gap and offers a unique piece of work by Evaluation the performance of project managers that affecting Libyan construction industries, therefore the main proposed contribution of this research are:

1. To provide some empirical evidence about the CSFs that affecting project success in LCI.

2. To fill the gap of knowledge regarding the factors affecting performance of project managers in developed countries such Libya.

3. The concept of linking the Project Managers performance measures to the project lifecycle is also a novel contribution in Libyan construction management research.

4. To develop guide of implementation of balanced scorecard in the Libyan construction companies.

10.7 Future and Scope of the Research:

The study itself evaluated the performance of construction project managers The literature review discussed all factors that affecting the performance of project managers within libyan industry . In order to fully understand the full role of project managers within construction projects these other factors must be investiagated in detail.

Other factors that can be examined are how newly recruited managers change from theire operations role to a leadership role. Also, The overall skill set of project managers also needs to be clearly defined.

For future studies, a pilot study should be carried out and several different construction firms should be visited in order to obtain data that portrays different opinions of construction professionals and project managers. In future, studies should also be done concentrating on project management practices within the UK construction industry, such as; partnering, risk management, value management, sustainable construction, benchmarking, supply chain management, lean construction and application of BIM within the construction industry. Once practice management practices in the UK are identified, they can be compared with Libyan management

practices and practices that have not yet been implemented in Libya can be used, also make comparison between UK and Libyan construction industries.

10.8 Summary

This chapter has provided a review of the original research objectives and the extent to which they were achieved. The conclusions have been presented and the limitations of the research have been acknowledged. Recommendations for further research have been proposed.

The research aimed to measure the performance of project managers in Libyan Construction Industries, identify the factors affect the managers and how these factors impact the success of construction projects

balanced scorecard has developed as the guideline, representing a robust mechanism for evaluate the performance of Project Managers and help the managers to solve problems quickly and easily .the balanced scorecard guideline could be used by construction industries in Libya to improve the performance of Project Managers.

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Appendix (1)

Summary Factors Affecting Construction Projects

Factors	Savles & Chandler(1971)	Martin (1976)	NEDO (1983)	Frver (1985)	Morris & Hough (1987)	Schultz et al. (1987)	Ashley et al. (1987)	Pinto and Slevin (1988)	Maloney (1990)	Newcomb et al. (1990)	Sanvido's et al. (1992)	Belasi and Tukel (1996)	Cheng et al (2000)	Hauschildt et al. (2000)	Cooke-Davies (2001	Cooke-Davies (2002)	Chan and	Cheng and Li (2002)	Fryer (2004)	Low and Quek (2005)	Iyer and Jha (2005)	Zhang & Faerman, 2007	Alsadey (2011)	Rahman,I. et,al (2013)
Time	*		*						*	*		*		*			*				*			
Cost			*		*		*					*		*			*				*			*
Quality			*									*		*				*		*				
Project Manager	*			*	*		*		*			*			*	*				*	*		*	
People	*	*				*	*		*		*	*	*	*		*		*			*	*		
Work Environment					*		*					*					*				*		*	
Decision Making				*																	*			
Customer Satisfaction						*											*				*			
Communication													*					*	*					
Health & Safety							*										*							
Solving Problem				*	*								*								*			
Mutual Trust													*					*						

Appendix (2)

Factors Affecting Project Managers' Success

External factors	Internal factors	Personal factors
Stakeholders	Business skills	Interpersonal skills
Environmental responsibility	Team leadership	Goal setting
Culture of the organization	Influence skills	Communication
	Financial responsibility	Integrity and honesty
		Developing others
		Decision making
		Problem solving
		Strategic or visionary thinking
		Conflict management
		Emotional intelligence
		Humour and innovation

Appendix (3)

Cover letter of questioners

Dear participant

I am a research student in engineering management at Coventry University in the United Kingdom.

My Research Covering, the Influence and Evaluation of the Project Managers Performance in the Libyan Construction Industry. The main aim of the study is to explore and identify the main factors that affect project manager performance within Libyan construction industries. The study will also investigate how these factors impact the success of construction projects.

Enclosed questionnaires has been developed as a part of the research project

We appreciate that the questionnaire is going to take up some of your valuable time, however, we urge you to try and participate, as your contribution is very important towards the success of the research. To this end, we wish to take this opportunity to thank you in advance for your cooperation.

Any information submitted or provided will be kept confidential and will be used for the purpose of the research only, the name of the company will not be revealed

Yours Sincerely

Nawal Gherbal

Appendix (4)

Questionnaires Survey:

Introduction on the construction project management questionnaire design objectives.

I am Nawal Gherbal School of the engineering and computing, Coventry University request you complete this questionnaire as a quantitative data collection source for my PHD project. I solicit your utmost co-operation as regard completing of this questionnaire to the best of your ability.

You have been selected to participate as one of the few amongst others with a track record of professionalism and excellence in the construction industry in our country Libya. The aim of this project is to eventually identify the factors to measuring the success the construction project in Libya construction industries and the performance of project manager.

Questionnaires were designed into two sections, the first part of the questionnaire was demographic questions which is personal data, background information, work experience, educations and positions. The second section **was** factors that influencing the success projects and Project managers' performance shills questions

The questionnaire is to be completed by Managing Directors and/or Senior project Managers who have the responsibility of engaging and supervising *project*. For this purpose, a *project manager* is the person who has the authority and responsibility for the *supervision* and *management* of the *physical construction.*

This questionnaire accurately should take minutes of your time to complete. Your best response to the questions will be much appreciated. Be rest assured that the confidentiality of your opinions/views would be strictly adhered to. Accept my gratitude in advance, for your willingness to participate and time to complete the questionnaire, in spite of your tight work schedule.

QUESTIONNAIRE: PERFORMANCE MANAGEMENT OF PROJECT MANAGERS

The Coventry University is currently engaged in a number of research projects involving Project management and project managers performance of construction projects within the Libya Construction Industry. This questionnaire has been designed to ascertain critical factors affecting performance measurement of project management. All answers will be treated in absolute confidence and used only for academic purposes. You are free to skip any question considered 'inquisitive' by putting a line across it. Extra space is provided to enable you to expand your answers to the questions where necessary

Questionnaire Survey

Thank you. *Please tick ☑ as appropriate*

PERSONAL DATA

1. What is your job title: .....

Please tick {√} the box next to appropriate answer

Q1 Are you?

a) Male ☐

b) Female ☐

Q2 what is your age?

a) Less than 25 years old ☐

b) 26-30 ☐

c) 31-40 ☐

d) 41-50

e) >50

Q3 what is your highest qualification?

a) Diploma

b) Bachelor

c) Master

d) PhD

Q4 what is your current position in the organisation?

a) Project director

b) Senior project manager

c) Managing director

d) Others

Q5 How many years have you been working in construction industry?

a) 3 - 5 years

b) 6 to 10 years

c) 16 to 20 years

d) More than 20

Section 2 Factors Affected Performance of Success Project

Not very important (10-29%), Not Important (30-49%), Average (50-69%), Important (70- 90%) and Very important (over 90%)

1- Time factors Questions

No.	**Item**	Not very important	Not Important	Average	Important	Very important
1	Material shortage					
2	Delay in materials being delivered					
3	Alteration in the price of materials					
4	Lack of equipment					
5	Material transportation					
6	Site storage					
7	Poor or inadequate material quality					
8	Equipment failure/ broken equipment					
9	Unsuitable equipment used for the job					
10	Lack of skilled manpower					
11	Project size					
12	Project Location					
13	Modifications to					

	the initial design					
14	Alterations to the scope and basis of the project					
15	Lack of communication between the contractor and other parties involved in the project					
16	Weak coordination from the contractor with other parties involved in the project					
17	Poor and ineffective planning and organization of the project by the contractor					
18	Subcontractors or suppliers receiving late payment from contractors					
19	Contractor receiving late payment from client					
20	Lack of direction					

	by the consultant engineer with other parties involved					
21	Order of priorities changed by the client					
22	Bureaucracy in government agencies					
23	Government policy changes					
24	Poor contract management					

2- Cost Factors Questions

NO.	item	Not very important	Not Important	Average	Important	Very important
1.	Changes made in design					
2.	Volatile weather conditions					
3.	Lack of organization and management at the design phase					
4.	Alterations in owner's brief					
5.	Planning costs and monitoring not correctly followed during pre and post contract stages					

6.	Provisional works retraced					
7.	Failure to report costing during construction stage					
8.	Scarce experience in project type					
9.	Lack of knowledge in local regulations					
10.	Insufficient project preparation, planning and implementation					
11.	Delay in construction as a result of raw materials and equipment being delivered late by contractors					
12.	Change in the extent of the project as a result of government policies					
13.	Incorrect site location					
14.	Weak organizational structure, failure to manage labor, ineffectiveness of technology					

15.	Inexperienced technical consultants and ineffective foreign collaboration agreements					
16.	Inability to recycle materials as a result of lack of managerial knowledge					
17.	Lack of experienced site workers					
18.	Over time working hours					
19.	Hiring skilled technicians to work					
20.	Contractor’s inability to adopt the project to its environment					
21.	Poor communication of bad results as a result of the economical political situation to stakeholders					

3. Quality Factor Questions

No.	**item**	Not very important	Not Important	Average	Important	Very important
1.	Coherence to specification					
2.	Recruitment of high experience and qualified workers					
3.	High quality of equipment and raw materials used in the project					
4.	Managers involvement in decision making					
5.	Implementation of quality assessment systems within the organization					
6.	Quality training and meetings					

4- Client Satisfaction Factor Questions

No.	Item	Not very important	Not Important	Average	Important	Very important
1.	Adequate communication between owner and project managers					
2.	Quality of the project manager leadership skills					
3.	Speed and reliability of service provided for the owner					
4.	Number of disagreements between owner and project contractors					
5.	Number of revisions made to design					

5- People Factors Questions

No.	Item	Not very important	Not Important	Average	Important	Very important
1.	Employee's attitude towards the project					
2.	Employee recruitment and capability					
3.	Employee motivation					

4.	Employee's work satisfaction levels					

6- Health and Safety Factor Questions

No.	Item	Not very important	Not Important	Average	Important	Very important
1.	Implementation of health and safety factors within the organization					
2.	Location of project					
3.	Number of reported accidents during project construction					
4.	Project assurance rate					

7- Work Environment Factor Questions

No.	**Item**	Not very important	Not Important	Average	Important	Very important
1.	Air quality					
2.	Noise levels					
3.	Waste and pollution around site location					

4.	Climate conditions within the site					

8- Communication Factor Questions

No.	Item	Not very important	Not Important	Average	Important	Very important
1.	Effective communication systems in place to contact customers					
2.	Effective communication systems in place to communication with suppliers/subcontractors.					
3.	Effective communication systems in place between top management and employees.					
4.	Changes in organization policy and reason for changes well communicated to employees					
5.	Customers can easily contact the company					

9- Project Manager Factor Questions

No.	Item	Not very important	Not Important	Average	Important	Very important
1.	Project Manager's previous experience					
2.	Competence of the Project Manager					
3.	Project manager leadership skills					
4.	Technical capability of the project manager					
5.	Project Manager's authority and ability to make day-to-day decisions					

10- Mutual Trust Factors Questions

No.	Item	Not very important	Not Important	Average	Important	Very important
1.	Legal disagreements made between various project parties					

2.	The type of construction contract produced (applies to Turnkey construction projects only)					
3.	Original project time frame is too short					
4.	Unproductive time penalties if the project is finished late					
5.	Project bidding type and the project being awarded to the lowest bidder					

11- Decision-Making Factors Questions

No.	Item	Not very important	Not Important	Average	Important	Very important
1.	The ability of owners to make fast decisions and update the register					

2.	Decisions made without considering all the implications					
3.	Effective supervision and control in place by the organization					
4.	Effective human resource management standards in place					
5.	The decision-making process is a deliberate logical process					

12- Problem-Solving Factor Questions

No.	Item	Not very important	Not Important	Average	Important	Very important
1.	Effective communication made between the owner and other parties involved in the implementation of the project					

2.	Owners offer rewards for milestones reached in the project					
3.	Adequate level of equipment used in the construction site					
4.	Effective project design that has no errors					

Thank you for your cooperation.

PhD Student / Nawal Gherbal

Appendix (5)

Letter to Construction Managers

Dear Mr.

I am a PhD student in engineering management at Coventry University in the United Kingdom and I am researching into ideas about Project Managers Performance and factors that affect project manager performance within Libyan construction industries. Currently I am interviewing project managers in order to obtain their views in this area and would like to invite you to participate in this study. In this research I would like to test by personal interviews with experienced Project Managers. The interview will last no more than one hour. Before the interview you will receive by e-mail a brief description of the research for background information. The interview has open ended questions (i. e. there are no restraints for the answers, all of them are equally valid and will be taken into account) in which you will be expected to give your opinion about Project Managers Performance and factors affect project manager performance . If you decide to participate in this study some background information would be required. All information you provide will be sanitised and treated with all confidence, your personal information will not be disclosed at any time. Your participation would be much appreciated

Your participation would be much appreciated

Kind Regards,

Nawal Gherbal

Appendix (6)

Interview questions:

1. What is the importance of the Project Manager's technical, business and management background?

2. How can a project manager facilitate good communication between parties?

3. Approximately, how many years of experience is required for a manager to be able to manage a project and what experiences are important for the project manager to have?

4. What are the main managerial skills Project Managers are required to have and how can good managers help make a project successful?

Appendix 7

Project Managers Interview Comments

Project Manager 1

1. **What is the importance of the Project Manager's technical, business and management background?**

The basis of the knowledge of the project manager is technical knowledge; if the manager has no technical background then they cannot be expected to manage construction projects. If a manager has lack of technical knowledge the project and the company is more likely to fail.

2. **How can a project manager facilitate good communication between parties?**

It is very important for Project Managers to communicate well and be able to communicate with all workers at different employee levels. The manager should be financially aware at all times and aware of physical operations surrounding them so that the project is well balanced and stakeholders are well aware of operation costs. A project manager should also be able to take a step back and not get lost in the irrelevant details of the project so that they can keep a level head and maintain an overview of different aspects of the project. A project manager should also have basic knowledge of how estimates are made and they must be able to understand how to use basic frameworks, they must also be familiar with how contract programmes are developed, how the business trade operates. All these skills put together will give a project manager the ability to deal with all aspects of the project. In terms of communication, as well as communicating they must be able to listen to the team and the opinions of the workforce and be prepared to make changes if required based on advice given by the team.

3. **Approximately, how many years of experience is required for a manager to be able to manage a project and what experiences are important for the project manager to have?**

It is expected for the project manager to have 10-15 years' experience to be able to manage a project well; studying and time at university is not included as experience is more valuable than education on construction projects. Therefore; in order to become a good project manager they must go through a period of training, planning and experience in order to be fully qualified for the job. Also, this will give the project manager self confidence so that they can be fully involved in all aspects of the project.

4. **What are the main managerial skills Project Managers are required to have and how can good managers help make a project successful?**

One of the most important skills for a manager to have is people skills so he can understand the employee's opinions and the direction of the project. Some are naturally born with people skills whilst others have to develop their skills over time. The project manager will be faced with many different types of employees and attitudes and they must be able to adapt and get on with everyone so that they can gain employee trust, cohesion, fairness and empathy. People skills will also help the manager communication, lead and motivate employees and this will increase productivity and contribute to the overall success of the project.

Project Manager **2**

1- What is the importance of the Project Manager's technical, business and management background?

The project manager must be an engineer; they should have technical background and should have a good understanding of current management systems so that they can use these skills as a project manager and be confident when working. They should also have adequate knowledge of all programs used in the company even if they will use them, it is important to be able to use them if required.

2. How can a project manager facilitate good communication between parties?

The most critical skills a project manager needs is good communication skills as the majority of the time the manager will be communication with employees, site workers, suppliers and stakeholders. It is important for the manager to be able to send the right message to the right people in the best way. Communication skills are also required for reports, presentations and email. The project manager must be able to adapt their style of communication when dealing with stakeholders and other workers. Communication is key in helping the project move in the right direction.

3- Approximately, how many years of experience is required for a manager to be able to manage a project and what experiences are important for the project manager to have?

In my opinion, the manager must have worked previously as a engineer for at least 10 years and during that time had dealt with different sites and positions or has worked with the same company for a while and is able to manage people in a confident and controlled manner. They should also be open to new ideas and new advances can help projects run more smoothly and be able to deal with any problems that may occur.

4- What are the main managerial skills required for a Project Manager to have and how can good managers make a project successful?

Leadership comes with experience and needs to develop over time so that the manager can tactfully make decisions and choose certain options and actions and be able to commit to the project fully. Leadership skills also mean that personal judgement must be made to encourage the team and workforce. An effective project manager should invest time in the project and negotiate with stakeholders to help the project progress. Another important skill a project manager should have is well developed problem solving skills and quick reaction time.

Project Manager 3

1- **What is the importance of the Project Manager's technical, business and management background?**

Technical background is essential. In my experience, I was a project manager for 20 years and I also managed contracts. Both these jobs helped me develop my role as a project manager; you need both technical and administrative knowledge in order to understand the running of the business. In terms of business background, it purely depends on the organisation of the business; many skills can be developed over time and courses. Fundamentally, the project manager should ensure the price of the project is technically sound.

2- **How can a project manager facilitate good communication between parties?**

Communication is the most imperative skill to develop. There are many way to communicate, such as; written communication, letters, memos etc. Managers often have to communicate in writing, emails are also used to communicate with stakeholders, but the best form of communication is verbal, by talking to people either on a one-to-one basis or in a meeting to an audience. When a project uses good communication skills the site tends to run a lot smoother and employees feel more included in the decision making process. One of the best methods of communication is to use a combination of verbal and written communication. Holding regular meeting and adopting a open door policy means workers will feel more relaxed and willing to make contributions to the project.

3- **Approximately, how many years of experience is required for a manager to be able to manage a project and what experiences are important for the project manager to have?**

The typical start age of a project manager is 35 years, because usually by that age they have 14- 15 year of experience and they are well aware of how the company runs, the

company’s culture and values, how to communicate with workers and how to approach problems.

4- **What are the main managerial skills required for a Project Manager to have and how can good managers make a project successful?**

Leadership and managerial skills are very important for a project manager. He must lead the team, give the team direction and ensure employees all work together. A project manager must also know when to change directions and adopt a different approach when the main plan comes to an unexpected event or the client changes their mind. They have to be able to make fast decisions appropriately using the provided resources. All these skills together make a great leader.

Project Manager 4

1- What is the importance of the Project Manager's technical, business and management background?

Technical skill is a very important attribute for project managers to have in order to complete specific tasks. Technical skills are developed through formal education, training and on-the-job training. Managers are also involved in helping employees complete their tasks and also train new employees. When mangers have a full skill set of technical skills, employees are more confident to approach their manger to help them complete their individual jobs.

2- How can a project manager facilitate good communication between parties?

Project success highly depends on the quality of communication between the manager and workers, stakeholders and suppliers. Effective communication helps keep employees up to date on the progress of the project and it also helps support stakeholder decisions. Project managers must also listen and be able to emphasize with workers.

Communication should occur through all levels whether it is verbal or in email. A good communicator should choose a simple method that can save project time and contribute to the success of the project.

3 Approximately, how many years of experience is required for a manager to be able to manage a project and what experiences are important for the project manager to have?

Experience is critical, the best age to start managing projects is 34 years, and at this age they should have worked and learned from other projects and other project managers. By using past experience, the manager can work must faster for the future.

4 What are the main managerial skills required for a Project Manager to have and how can good managers make a project successful?

Key managerial skills include leadership, motivation and good decision making skills. The project manager should be able to make decisions with ease, take responsibility and be confident and not hide away. Confidence develops over time as does decision making, these will all slowly develop and the manager will feel ready to take responsibility for his own decision. He must also have a good understanding of relationships within the company as well as legal, financial and administrative knowledge.

Project Manager 5

1- What is the importance of the Project Manager's technical, business and management background?

In our company it is preferred that the manager has a technical degree because managing a project is a technical thing; i.e. if you were the project manager for a financial venture then having a background in finance is important. Subsequently, having a technical background and knowledge is essential.

2- How can a project manager facilitate good communication between parties?

An important skill for a manager to have is to be a great communicator. Communication can always be improved within a project. Communication is not merely speaking to and hearing from people but also being able to interpret and understand the message. It is important to discuss and communicate current issues and economical challenges that can face a project. It is a key duty of the project manager to communicate with his team and the stakeholders. The team must be kept updated about any changes and the progress of the project and they should be informed of any job requirements. The client must also be kept informed on the progress of the project. The most successful project managers are those who develop communication skills effectively in order meet the demands of both sides.

3- Approximately, how many years of experience is required for a manager to be able to manage a project and what experiences are important for the project manager to have?

They should have at least 10-15 years of experience before managing their own project. One great way of attaining experience is through on-the-job training as this makes them aware of their typical roles and responsibilities. Hence, experience is essential for a project manager as he will be responsible for planning, finance and the overall progress of the project.

With experience, confidence will also develop so they are able to make correct decisions that can contribute to the success of the project.

4 What are the main managerial skills required for a Project Manager to have and how can good managers make a project successful?

Leadership is a crucial quality that, in my opinion, many managers lack despite their job title. Unfortunately, it is the norm to employee managers who produce the best results; however they tend to neglect their leadership roles. Leadership is a important task that not all managers have. Leadership also ensures tasks are completely properly. A extensive set of skills is required in order to be a effective project manager. True leaders are able to inspire, provide direction, delegate responsibility and instil trust amongst team members.